

# AMERICAN PSYCHOLOGIST

VOLUME 16



NUMBER 3

*March 1961*

*Published Monthly by*  
THE AMERICAN PSYCHOLOGICAL ASSOCIATION, INC.

# *Psychology*

## *Books from McGraw-Hill . . .*

### **CONFLICT, AROUSAL, AND CURIOSITY**

By D. E. BERLYNE, McGraw-Hill  
Series in Psychology, 350 pages, \$7.50.

An advanced, graduate-level book intended as a contribution to behavior theory. The author reviews such facts as are available relevant to attention and exploratory behavior; presents a tentative theory to integrate these facts and guide future research; and shows the connections between exploratory behavior and such areas as motivation and learning, thinking, aesthetics, and humor. Further, he points out interrelationships between various lines of theory and research in the field.

### **ADJUSTMENT AND PERSONALITY**

By RICHARD S. LAZARUS, University  
of California. McGraw-Hill Series in  
Psychology, 480 pages, \$6.50.

This text provides thorough coverage of the basic issues and points of view in the psychology of adjustment. This book, viewing the process of adjustment as an inseparable component of personality, is written at a high level of scholarship and will prove stimulating and valuable over a wide range of undergraduate courses for majors in psychology, as well as non-majors whose interest extends beyond the introductory level.

### **INDUSTRIAL PSY- CHOLOGY**

By B. Von Haller Gilmer, Carnegie In-  
stitute of Technology. The McGraw-  
Hill Psychology Series. 512 pages,  
\$7.50.

This new book presents an organized and unified view of the contributions of experimental, social, and clinical psychology to the study of the human aspects of the industrial complex. Based on the review of some fifteen thousand publications in the several areas, the book examines the industrial environment, personnel psychology, human performance, influence, the industrial community, and the mental health aspects of industry.

### **PSYCHOLOGY OF HUMAN DEVELOPMENT**

By JUSTIN PIKUNAS and EUGENE J.  
ALBRECHT, University of Detroit.  
343 pages, \$6.50.

A textbook for undergraduate courses in develop-  
mental psychology covering the entire life span  
from prenatal growth to senescence. The stress is  
on the continuity of human life: each age level is  
seen in the light of past development and as a prepa-  
ration for successive levels. Emphasis throughout  
is on the "self" and the development of the "self-  
concept."

### **PSYCHOLOGY OF PERSONALITY, Third Edition**

By ROSS STAGNER, Wayne State  
University. 586 pages, \$7.50.

The third edition of an excellent text designed to  
provide the student with an introduction to current  
knowledge of the normal personality. Emphasis is  
placed on the author's conception of personality  
development and organization, built around homeo-  
stasis and the process of perceiving. Alternative  
formulations are discussed. Topics include: atti-  
tudes and values, the family, the school system,  
class and economic factors, personality and social  
values, emotional foundations, etc.

### **INTRODUCTION TO PSYCHOLOGY, Second Edition**

By Clifford T. Morgan, University of  
Wisconsin. Ready in April, 1961.

This outstanding introductory text has been care-  
fully revised. The writing, new design, format and  
materials have been coordinated to make it more  
challenging and rigorous. The text, as before, is  
broad in coverage and organized to meet the needs  
of courses with varying emphasis. It covers the  
traditional topics of general psychology and indi-  
vidual differences, as well as the physiological,  
social, applied, and clinical areas.

SEND FOR COPIES  
ON APPROVAL

**McGraw-Hill BOOK COMPANY, INC.**  
330 West 42nd Street New York 36, New York

# AMERICAN PSYCHOLOGIST

Journal of the American Psychological Association, Inc.

---

Volume 16

March 1961

Number 3

---

## *In this Issue*

Social Psychology and Desegregation Research. THOMAS F. PETTIGREW . . . .	105
Men, Machines, and Models. ALPHONSE CHAPANIS . . . . .	113
The Meaning of the ABEPP Diploma. NOBLE H. KELLEY, FILLMORE H. SANFORD, AND KENNETH E. CLARK . . . . .	132
Comment . . . . .	142
Psychology in Action . . . . .	145
Psychology in the News . . . . .	149
Psychology in the States . . . . .	151
Notes and News . . . . .	154
Convention Calendar . . . . .	159
Convention Announcements: Sixty-Ninth Annual Convention of the APA. GEORGE S. SPEER AND CHARLES COFER . . . . .	160

---

JOHN G. DARLEY, Editor

ARTHUR C. HOFFMAN, Managing Editor

HELEN ORR, Promotion Manager

AMERICAN PSYCHOLOGIST is published monthly at Prince and Lemon Streets, Lancaster, Pennsylvania. Subscription: \$10.00. Single copy: \$1.00. Communications on editorial and business matters and advertising should be addressed to the American Psychological Association, Inc., 1333 Sixteenth Street N.W., Washington 6, D. C. Address changes must reach the Subscription Office by the tenth of the month to take effect the following month. Undelivered copies resulting from address changes will not be replaced; subscribers should notify the post office that they will guarantee second-class forwarding postage. Other claims for undelivered copies must be made within 4 months of publication.

Second-class postage paid at Lancaster, Pa.

Copyright © 1961 by the American Psychological Association, Inc.

## Officers of the American Psychological Association

### *President*

NEAL E. MILLER  
Yale University  
New Haven, Connecticut

### *President-elect*

PAUL E. MEEHL  
University of Minnesota  
Minneapolis, Minnesota

### *Past President*

DONALD O. HEBB  
McGill University  
Montreal, Canada

### *Recording Secretary*

LAUNOR F. CARTER  
System Development Corporation  
Santa Monica, California

### *Treasurer*

MEREDITH P. CRAWFORD  
Human Resources Research Office  
Washington 6, D. C.

### *Executive Officer*

JOHN G. DARLEY  
1333 Sixteenth Street N.W.  
Washington 6, D. C.

### *Board of Directors*

The President, the President-elect, the Past President, the Recording Secretary, the Treasurer, the Executive Officer, and DANIEL KATZ, QUINN McNEMAR, EDWIN B. NEWMAN, VICTOR C. RAIMY, NEVITT SANFORD, and M. BREWSTER SMITH.

The American Psychological Association, founded in 1892 and incorporated in 1925, is the major psychological organization in the United States. The purpose of the APA is to advance psychology as a science, as a profession, and as a means of promoting human welfare. It attempts to further these objectives by holding annual meetings, publishing psychological journals, and working toward improved standards for psychological training and service.

In addition to journals, the APA publishes a monthly *Employment Bulletin* and an annual biographical *Directory*.

All general communications; inquiries concerning membership; letters concerning dues, subscriptions, and changes of address should be directed to:

American Psychological Association, Inc.  
1333 Sixteenth Street, N.W.  
Washington 6, D. C.

## Publications of the American Psychological Association

**American Psychologist.** Editor: JOHN G. DARLEY, American Psychological Association. Official papers of the association and articles on psychology. Monthly. Subscription: \$10.00 (Foreign \$10.50). Single copies, \$1.00.

**Contemporary Psychology.** Editor: EDWIN G. BORING, Harvard University. Critical reviews of books, films, and other material in the field of psychology. Monthly. Subscription: \$10.00 (Foreign \$10.50). Single copies, \$1.00.

**Journal of Abnormal and Social Psychology.** Editor: M. BREWSTER SMITH, University of California, Berkeley. Original contributions in the field of abnormal and social psychology, and case reports. Bimonthly, two volumes per year. Subscription: \$20.00 for 2 vols. (Foreign \$20.50). Single copies, \$4.00.

**Journal of Applied Psychology.** Editor: KENNETH E. CLARK, University of Colorado. Applications of psychology to business and industry. Bimonthly. Subscription: \$10.00 (Foreign \$10.50). Single copies, \$2.00.

**Journal of Comparative and Physiological Psychology.** Editor: HARRY F. HARLOW, University of Wisconsin. Original contributions in the field of comparative and physiological psychology. Bimonthly. Subscription: \$10.00 (Foreign \$10.50). Single copies, \$2.00.

**Journal of Consulting Psychology.** Editor: EDWARD S. BORDIN, University of Michigan. Research in clinical psychology: psychological diagnosis, psychotherapy, personality, and psychopathology. Bimonthly. Subscription: \$10.00 (Foreign \$10.50). Single copies, \$2.00.

**Journal of Educational Psychology.** Editor: RAYMOND G. KUHNEN, Syracuse University. Studies of learning and teaching. Bimonthly. Subscription: \$10.00 (Foreign \$10.50). Single copies, \$2.00.

**Journal of Experimental Psychology.** Editor: ARTHUR W. MELTON, University of Michigan. Original contributions of an experimental character. Monthly, two volumes per year. Subscription: \$20.00 for 2 vols. (Foreign \$20.50). Single copies, \$2.00.

**Psychological Abstracts.** Editor: CLIFFORD T. MORGAN, University of Wisconsin. Noncritical abstracts of the world's literature in psychology and related subjects. Bimonthly. Subscription: \$20.00 (Foreign \$20.50). Single copies, \$4.00.

**Psychological Bulletin.** Editor: HARRY HELSON, University of Texas. Evaluative reviews of research literature, and articles on research methodology in psychology. Bimonthly. Subscription: \$10.00 (Foreign \$10.50). Single copies, \$2.00.

**Psychological Monographs: General and Applied.** Editor: NORMAN L. MUNN, Bowdoin College. Longer researches and laboratory studies which appear as units. Published at irregular intervals. Subscription: \$10.00 per volume (Foreign \$10.50). Single copies, price varies according to size.

**Psychological Review.** Editor: RICHARD L. SOLOMON, University of Pennsylvania. Original contributions of a theoretical nature. Bimonthly. Subscription: \$10.00 (Foreign \$10.50). Single copies, \$2.00.



# SOCIAL PSYCHOLOGY AND DESEGREGATION RESEARCH<sup>1</sup>

THOMAS F. PETTIGREW

*Harvard University*

**W**HAT one hears and what one sees of southern race relations today are sharply divergent. Consider some of the things that occur in interviews with white Southerners.

"As much as my family likes TV," confided a friendly North Carolina farmer, "we always turn the set off when they put them colored people on." But as the two of us were completing the interview, a series of famous Negro entertainers performed on the bright, 21-inch screen in the adjoining room. No one interrupted them.

A rotund banker in Charleston, South Carolina, was equally candid in his remarks: "Son, under no conditions will the white man and the black man ever get together in this state." He apparently preferred to ignore the government sponsored integration at his city's naval installation, just a short distance from his office.

Another respondent, this time a highly educated Chattanooga businessman, patiently explained to me for over an hour how race relations had not changed at all in his city during the past generation. As I left his office building, I saw a Negro policeman directing downtown traffic. It was the first Negro traffic cop I had ever seen in the South.

The South today is rife with such contradictions; social change has simply been too rapid for many Southerners to recognize it. Such a situation commands the attention of psychologists—particularly those in the South.

There are many other aspects of this sweeping process that should command our professional attention. To name just two, both the pending violence and the stultifying conformity attendant with desegregation are uniquely psychological problems. We might ask, for instance, what leads to violence in some desegregating communities, like Little Rock and Clinton, and not in others, like Norfolk and Winston-Salem? A multiplicity of factors must be relevant and further research is

desperately needed to delineate them; but tentative early work seems to indicate that desegregation violence so far has been surprisingly "rational." That is, violence has generally resulted in localities where at least some of the authorities give prior hints that they would gladly return to segregation if disturbances occurred; peaceful integration has generally followed firm and forceful leadership.<sup>2</sup>

Research concerning conformity in the present situation is even more important. Many psychologists know from personal experience how intense the pressures to conform in racial attitudes have become in the present-day South; indeed, it appears that the first amendment guaranteeing free speech is in as much peril as the fourteenth amendment. Those who dare to break consistently this conformity taboo must do so in many parts of the South under the intimidation of slanderous letters and phone calls, burned crosses, and even bomb threats. Moreover, this paper will contend that conformity is the social psychological key to analyzing desegregation.

It is imperative that psychologists study these phenomena for two reasons: first, our psychological insights and methods are needed in understanding and solving this, our nation's primary internal problem; second, this process happening before our eyes offers us a rare opportunity to test in the field the psychological concomitants of cultural stress and social change. Thus I would like in this paper to assess some of the prospects and directions of these potential psychological contributions.

## ROLE OF SOCIAL SCIENCE IN THE DESEGREGATION PROCESS TO DATE

The role of social science, particularly sociology and psychology, in the desegregation process has been much publicized and criticized by southern segregationists.<sup>3</sup> Many of these critics apparently

<sup>2</sup> Clark (1953) predicted this from early border-state integration, and a variety of field reports have since documented the point in specific instances.

<sup>3</sup> For instance, once-liberal Virginius Dabney (1957, p. 14), editor of the *Richmond Times-Dispatch*, charged that "the violence at Little Rock . . . never would have happened if nine justices had not consulted sociologists and psychologists, instead of lawyers, in 1954, and attempted to legislate through judicial decrees."

<sup>1</sup> This paper was given as an invited address at the Annual Meeting of the Southeastern Psychological Association, Atlanta, Georgia, March 31, 1960. The author wishes to express his appreciation to Gordon W. Allport of Harvard University, E. Earl Baughman of the University of North Carolina, and Cooper C. Clements of Emory University for their suggestions.

think that sociology is synonymous with socialism and psychology with brainwashing. In any event, their argument that we have been crucially important in the Supreme Court desegregation cases of the fifties is based largely on the reference to seven social science documents in Footnote 11 of the famous 1954 *Brown vs. Board of Education* decision. It would be flattering for us to think that our research has had such a dramatic effect on the course of history as segregationists claim, but in all truth we do not deserve such high praise.

In making their claim that the 1954 decision was psychological and not legal, the segregationists choose to overlook several things. The 1954 ruling did not come suddenly "out of the blue"; it was a logical continuation of a 44-year Supreme Court trend that began in 1910 when a former private in the Confederate Army, the liberal Edward White, became Chief Justice (Logan, 1956). When compared to this backdrop, our influence on the 1954 ruling was actually of only footnote importance. Furthermore, the language and spirit of the 1896 *Plessy vs. Ferguson*, separate-but-equal decision, so dear to the hearts of segregationists, were as immersed in the jargon and thinking of the social science of that era as the 1954 decision was of our era. Its 1896, Sumnerian argument that laws cannot change "social prejudices" (Allport, 1954, pp. 469-473) and its use of such social Darwinism terms as "racial instincts" and "natural affinities" lacked only a footnote to make it as obviously influenced by the then current social science as the 1954 ruling.

A final reason why we do not deserve the flattering praise of the segregationists is our failure to make substantial contributions to the process since 1954. The lack of penetrating psychological research in this area can be traced directly to three things: the lack of extensive foundation support, conformity pressures applied in many places in the South that deter desegregation research, and the inadequacy of traditional psychological thinking to cope with the present process. Let us discuss each of these matters in turn.

A few years ago Stuart Cook (1957) drew attention to the failure of foundations to support desegregation research; the situation today is only slightly improved. It appears that a combination of foundation fears has produced this situation. One set of fears, as Cook noted, may stem from concern over attacks by southern Congressmen on their tax free status; the other set may stem from

boycotts carried out by some segregationists against products identified with the foundations. In any case, this curtailment of funds is undoubtedly one reason why social scientists have so far left this crucial process relatively unstudied. Recently, however, a few moderate sized grants have been made for work in this area; hopefully, this is the beginning of a reappraisal by foundations of their previous policies. And it is up to us to submit competent research proposals to them to test continually for any change of these policies.

It is difficult to assess just how much damage has been done to desegregation research in the South by segregationist pressures. Probably the number of direct refusals to allow such research by southern institutions outside of the Black Belt has actually been small. More likely, the greatest harm has been rendered indirectly by the stifling atmosphere which prevents us from actually testing the limits of research opportunities. Interested as we may be in the racial realm, we decide to work in a less controversial area. Perhaps it is less a matter of courage than it is of resignation in the face of what are thought to be impossible barriers. If these suspicions are correct, there is real hope for overcoming in part this second obstacle to desegregation research.

In some situations, there should be little resistance. In racially integrated veterans' hospitals, for instance, much needed personality studies comparing Negro and white patients should be possible. In other situations, the amount of resistance to race research may be less than we anticipate. Since Little Rock, many so-called "moderates" in the South, particularly businessmen, have become more interested in the dynamics of desegregation. This is not to say that they are more in favor of racial equality than they were; it is only to suggest that the bad publicity, the closing of schools, and the economic losses suffered by Little Rock have made these influential Southerners more receptive to objective and constructive research on the process. It is for this reason that it is imperative the limits for the southern study of desegregation be tested at this time.

Finally, psychological contributions to desegregation research have been restricted by the inadequacy of traditional thinking in our discipline. More specifically, the relative neglect of situational variables in interracial behavior and a restricted interpretation and use of the attitude concept hinder psychological work in this area.

The importance of the situation for racial interaction has been demonstrated in a wide variety of settings. All-pervasive racial attitudes are often not involved; many individuals seem fully capable of immediate behavioral change as situations change. Thus in Panama there is a divided street, the Canal Zone side of which is racially segregated and the Panamanian side of which is racially integrated. Biesanz and Smith (1951) report that most Panamanians and Americans appear to accommodate without difficulty as they go first on one side of the street and then on the other. Likewise in the coal mining county of McDowell, West Virginia, Minard (1952) relates that the majority of Negro and white miners follow easily a traditional pattern of integration below the ground and almost complete segregation above the ground. The literature abounds with further examples: southern white migrants readily adjusting to integrated situations in the North (Killian, 1949), northern whites approving of employment and public facility integration but resisting residential integration (Reitzes, 1953), etc. Indeed, at the present time in the South there are many white Southerners who are simultaneously adjusting to bus and public golf course integration and opposing public school integration. Or, as in Nashville, they may have accepted school integration but are opposing lunch counter integration.

This is not to imply that generalized attitudes on race are never invoked. There are some Panamanians and some Americans who act about the same on both sides of the Panamanian street. Minard (1952) estimated about two-fifths of the West Virginian miners he observed behave consistently in either a tolerant or an intolerant fashion both below and above ground. And some whites either approve or disapprove of all desegregation. But these people are easily explained by traditional theory. They probably consist of the extremes in authoritarianism; their attitudes on race are so generalized and so salient that their consistent behavior in racial situations is sometimes in defiance of the prevailing social norms.

On the other hand, the "other directed" individuals who shift their behavior to keep in line with shifting expectations present the real problem for psychologists. Their racial attitudes appear less salient, more specific, and more tied to particular situations. Conformity needs are predominantly important for these people, and we shall

return shortly to a further discussion of these conformists.

One complication introduced by a situational analysis is that interracial contact itself frequently leads to the modification of attitudes. A number of studies of racially integrated situations have noted dramatic attitude changes, but in most cases the changes involved specific, situation linked attitudes. For example, white department store employees become more accepting of Negroes in the work situation after equal status, integrated contact but not necessarily more accepting in other situations (Harding & Hogrefe, 1952). And *The American Soldier* studies (Stouffer, Suchman, DeVinney, Star, & Williams, 1949) found that the attitudes of white army personnel toward the Negro as a fighting man improve after equal status, integrated contact in combat, but their attitudes toward the Negro as a social companion do not necessarily change. In other words, experience in a novel situation of equal status leads to acceptance of that specific situation for many persons. Situations, then, not only structure specific racial behavior, but they may change specific attitudes in the process.

One final feature of a situational analysis deserves mention. Typically in psychology we have tested racial attitudes in isolation, apart from conflicting attitudes and values. Yet this is not realistic. As the desegregation process slowly unfolds in such resistant states as Virginia and Georgia, we see clearly that many segregationist Southerners value law and order, public education, and a prosperous economy above their racial views. Once such a situation pits race against other entrenched values, we need to know the public's hierarchy of these values. Thus a rounded situational analysis requires the measures of racial attitudes in the full context of countervalues.<sup>4</sup>

A second and related weakness in our psychological approach is the failure to exploit fully the broad and dynamic implications of the attitude concept. Most social psychological research has dealt with attitudes as if they were serving only an expressive function; but racial attitudes in the South require a more complex treatment.

In their volume, *Opinion and Personality*, Smith, Bruner, and White (1956) urge a more expansive interpretation of attitudes. They note three attitude functions. First, there is the *object appraisal*

<sup>4</sup> A popular treatment of this point has been made by Zinn (1959).

function; attitudes aid in understanding "reality" as it is defined by the culture. Second, attitudes can play a *social adjustment* role by contributing to the individual's identification with, or differentiation from, various reference groups. Finally, attitudes may reduce anxiety by serving an expressive or *externalization* function.

Externalization occurs when an individual . . . senses an analogy between a perceived environmental event and some unresolved inner problem . . . [and] adopts an attitude . . . which is a transformed version of his way of dealing with his inner difficulty (pp. 41-44). (Reprinted with permission of John Wiley & Sons, Inc.)

At present the most fashionable psychological theories of prejudice—frustration-aggression, psychoanalytic, and authoritarianism—all deal chiefly with the externalization process. Valuable as these theories have been, this exclusive attention to the expressive component of attitudes has been at the expense of the object appraisal and social adjustment components. Moreover, it is the contention of this paper that these neglected and more socially relevant functions, particularly social adjustment, offer the key to further psychological advances in desegregation research.<sup>5</sup>

The extent to which this psychological concentration on externalization has influenced the general public was illustrated recently in the popular reaction to the swastika desecrations of Jewish temples. The perpetrators, all agreed, must be juvenile hoodlums, or "sick," or both. In other words, externalization explanations were predominantly offered.<sup>6</sup> Valid though these explanations may be in many cases, is it not also evident that the perpetrators were accurately reflecting the anti-Semitic norms of their subcultures? Thus their acts and the attitudes behind their acts are socially adjusting for these persons, given the circles in which they move.

Much less the public, some sociologists, too, have been understandably misled by our overemphasis on externalization into underestimating the psychological analysis of prejudice. One sociologist (Rose, 1956) categorically concludes:

<sup>5</sup> Though this paper emphasizes the social adjustment aspect of southern attitudes toward Negroes, the equally neglected object appraisal function is also of major importance. Most southern whites know only lower class Negroes; consequently their unfavorable stereotype of Negroes serves a definite reality function.

<sup>6</sup> Such explanations also serve for many anti-Semitic observers as an ego-alien defense against guilt.

There is no evidence that . . . any known source of "prejudice" in the psychological sense is any more prevalent in the South than in the North (p. 174).

Two others (Rabb & Lipset, 1959) maintain firmly: the psychological approach, as valuable as it is, does not explain the preponderance of people who engage in prejudiced behavior, but do *not* have special emotional problems (p. 26).

Both of these statements assume, as some psychologists have assumed, that externalization is the only possible psychological explanation of prejudice. These writers employ cultural and situational norms as explanatory concepts for racial prejudice and discrimination, but fail to see that conformity needs are the personality reflections of these norms and offer an equally valid concept on the psychological level. To answer the first assertion, recent evidence indicates that conformity to racial norms, one "known source of prejudice," is "more prevalent in the South than in the North." To answer the second assertion, strong needs to conform to racial norms in a sternly sanctioning South, for instance, are *not* "special emotional problems." Psychology is not just a science of mental illness nor must psychological theories of prejudice be limited to the mentally ill.

#### CONFORMITY AND SOCIAL ADJUSTMENT IN SOUTHERN RACIAL ATTITUDES

Evidence of the importance of conformity in southern attitudes on race has been steadily accumulating in recent years. The relevant data come from several different research approaches; one of these is the study of anti-Semitism. Roper's (1946, 1947) opinion polls have twice shown the South, together with the Far West, to be one of the least anti-Semitic regions in the United States. Knapp's (1944) study of over 1,000 war rumors from all parts of the country in 1942 lends additional weight to this finding. He noted that anti-Semitic stories constituted 9% of the nation's rumors but only 3% of the South's rumors. By contrast, 8.5% of the southern rumors concerned the Negro as opposed to only 3% for the nation as a whole. Consistent with these data, too, is Prothro's (1952) discovery that two-fifths of his white adult sample in Louisiana was quite favorable in its attitudes toward Jews but at the same time quite unfavorable in its attitudes toward Negroes. But if the externalization function were predominant in southern anti-Negro attitudes, the South should also be highly anti-Semitic. Externalizing



bigots do not select out just the Negro; they typically reject all out-groups, even, as Hartley (1946) has demonstrated, out-groups that do not exist.

Further evidence comes from research employing the famous F Scale measure of authoritarianism (Adorno, Frenkel-Brunswik, Levinson, & Sanford, 1950). Several studies, employing both student and adult samples, have reported southern F Scale means that fall well within the range of means of comparable nonsouthern groups (Milton, 1952; Pettigrew, 1959; Smith & Prothro, 1957). Moreover, there is no evidence that the family pattern associated with authoritarianism is any more prevalent in the South than in other parts of the country (Davis, Gardner, & Gardner, 1941; Dollard, 1937). It seems clear, then, that the South's heightened prejudice against the Negro cannot be explained in terms of any regional difference in authoritarianism. This is not to deny, however, the importance of the F Scale in predicting individual differences; it appears to correlate with prejudice in southern samples at approximately the same levels as in northern samples (Pettigrew, 1959).

The third line of evidence relates conformity measures directly to racial attitudes. For lack of a standardized, nonlaboratory measure, one study defined conformity and deviance in terms of the respondents' social characteristics (Pettigrew, 1959). For a southern white sample with age and education held constant, potentially conforming respondents (i.e., females or church attenders) were *more* anti-Negro than their counterparts (i.e., males or nonattenders of church), and potentially deviant respondents (i.e., armed service veterans or political independents) were *less* anti-Negro than their counterparts (i.e., nonveterans or political party identifiers). None of these differences were noted in a comparable northern sample. Furthermore, Southerners living in communities with relatively small percentages of Negroes were less anti-Negro than Southerners living in communities with relatively large percentages of Negroes, though they were *not* less authoritarian. In short, respondents most likely to be conforming to cultural pressures are more prejudiced against Negroes in the South but not in the North. And the percentage of Negroes in the community appears to be a fairly accurate index of the strength of these southern cultural pressures concerning race.

Thus all three types of research agree that conformity to the stern racial norms of southern cul-

ture is unusually crucial in the South's heightened hostility toward the Negro.<sup>7</sup> Or, in plain language, it is the path of least resistance in most southern circles to favor white supremacy. When an individual's parents and peers are racially prejudiced, when his limited world accepts racial discrimination as a given of life, when his deviance means certain ostracism, then his anti-Negro attitudes are not so much expressive as they are socially adjusting.

This being the case, it is fortunate that a number of significant laboratory and theoretical advances in the conformity realm have been made recently in our discipline. Solomon Asch's (1951) pioneer research on conformity, followed up by Crutchfield (1955) and others, has provided us with a wealth of laboratory findings, many of them suggestive for desegregation research. And theoretical analyses of conformity have been introduced by Kelman (1958, 1961), Festinger (1953, 1957), and Thibaut and Kelley (1959); these, too, are directly applicable for desegregation research. Indeed, research in southern race relations offers a rare opportunity to test these empirical and theoretical formulations in the field on an issue of maximum salience.

Consider the relevance of one of Asch's (1951) intriguing findings. Asch's standard situation, you will recall, employed seven pre-instructed assistants and a genuine subject in a line judgment task. On two-thirds of the judgments, the seven assistants purposely reported aloud an obviously incorrect estimate; thus the subject, seated eighth, faced unanimous pressure to conform by making a similarly incorrect response. On approximately one-third of such judgments, he yielded to the group; like the others, he would estimate a 5-inch line as 4 inches. But when Asch disturbed the unanimity by having one of his seven assistants give the correct response, the subjects yielded only a tenth, rather than a third, of the time. Once unanimity no longer existed, even when there was only one supporting colleague, the subject could better withstand the pressure of the majority to conform. To carry through the analogy to today's crisis in the South, obvious 5-inch lines are being widely described as 4 inches. Many Southerners, faced with what appears to be solid unanimity, submit to the distortion. But when even one respected source—a minister, a newspaper editor, even a

<sup>7</sup> Similar analyses of South African student data indicate that the social adjustment function may also be of unusual importance in the anti-African attitudes of the English in the Union (Pettigrew, 1958, 1960).



college professor—conspicuously breaks the unanimity, *perhaps* a dramatic modification is achieved in the private opinions of many conforming Southerners. Only an empirical test can learn if such a direct analogy is warranted.

Consider, too, the relevance of recent theoretical distinctions. Kelman (1958, 1961), for example, has clarified the concept of conformity by pointing out that three separate processes are involved: *compliance*, *identification*, and *internalization*. Compliance exists when an individual accepts influence not because he believes in it, but because he hopes to achieve a favorable reaction from an agent who maintains surveillance over him. Identification exists when an individual accepts influence because he wants to establish or maintain a satisfying relationship with another person or group. The third process, internalization, exists when an individual accepts influence because the content of the behavior itself is satisfying; unlike the other types of conformity, internalized behavior will be performed without the surveillance of the agent or a salient relationship with the agent. It is with this third process that Kelman's ideas overlap with authoritarian theory.

We have all witnessed illustrations of each of these processes in the acceptance by Southerners of the region's racial norms. The "Uncle Tom" Negro is an example of a compliant Southerner; another example is furnished by the white man who treats Negroes as equals only when not under the surveillance of other whites. Identification is best seen in white Southerners whose resistance to racial integration enables them to be a part of what they erroneously imagine to be Confederate tradition. Such identifiers are frequently upwardly mobile people who are still assimilating to urban society; they strive for social status by identifying with the hallowed symbols and shibboleths of the South's past. Southerners who have internalized the white supremacy dictates of the culture are the real racists who use the issue to gain political office, to attract resistance group membership fees, or to meet personality needs. Southerners with such contrasting bases for their racial attitudes should react very differently toward desegregation. For instance, compliant whites can be expected to accept desegregation more readily than those who have internalized segregationist norms.

On the basis of this discussion of conformity, I would like to propose a new concept: *the latent liberal*. This is not to be confused with the cher-

ished southern notion of the "moderate"; the ambiguous term "moderate" is presently used to describe everything from an integrationist who wants to be socially accepted to a racist who wants to be polite. Rather, the latent liberal refers to the Southerner who is neither anti-Semitic nor authoritarian but whose conformity habits and needs cause him to be strongly anti-Negro. Through the processes of compliance and identification, the latent liberal continues to behave in a discriminatory fashion toward Negroes even though such behavior conflicts with his basically tolerant personality. He is at the present time *il*liberal on race, but he has the personality potentiality of becoming liberal once the norms of the culture change. Indeed, as the already unleashed economic, legal, political, and social forces restructure the South's racial norms, the latent liberal's attitudes about Negroes will continue to change. Previously cited research suggests that there are today an abundance of white Southerners who meet this latent liberal description; collectively, they will reflect on the individual level the vast societal changes now taking place in the South.

#### SOME SUGGESTED DIRECTIONS FOR FUTURE PSYCHOLOGICAL RESEARCH ON DESEGREGATION\*

We are in serious need of research on the Negro, both in the North and in the South. Most psychological research in this area was conducted during the 1930s and directed at testing racists' claims of Negro inferiority. But the most sweeping advances in American Negro history have been made in the past generation, requiring a fresh new look—particularly at the Negro personality.

Two aspects of this research make it complex and difficult. In the first place, the race of the interviewer is a complicating and not as yet fully understood factor. Further methodological study is needed on this point. Moreover, special problems of control are inherent in this research. Not only are there some relatively unique variables that must be considered (e.g., migration history, differential experience with the white community, etc.), but such simple factors as education are not easy to control. For instance, has the average graduate of a southern rural high school for Negroes received an education equal to the average graduate of such a school for whites? No, in spite of the South's belated efforts to live up to separate-but-equal edu-

\*For other suggestions, see the important analysis of desegregation by Cook (1957).

cation, available school data indicate that the graduates have probably not received equivalent educations. Yet some recent research on Negro personality has been based on the assumption that Negro and white education in the South are equivalent (e.g., Smith & Prothro, 1957).

Fortunately, the Institute for Research in the Social Sciences at the University of North Carolina has embarked on a large study of many of these content and methodological problems. It is to be hoped that their work will stimulate other efforts.

Some of the most valuable psychological data now available on desegregation have been collected by public opinion polls. But typically these data have been gathered without any conceptual framework to guide their coverage and direction.

For example, one of the more interesting poll findings is that a majority of white Southerners realize that racial desegregation of public facilities is inevitable even though about six out of seven strongly oppose the process (Hyman & Sheatsley, 1956). The psychological implications of this result are so extensive that we would like to know more. Do the respondents who oppose desegregation but accept its inevitability have other characteristics of latent liberals? Are these respondents more often found outside of the Black Belt? Typically, we cannot answer such questions from present poll data; we need to build into the desegregation polls broader coverage and more theoretical direction.

The third direction that psychological research in desegregation could usefully take concerns measurement. Save for the partly standardized F Scale, we still lack widely used, standardized field measures of the chief variables in this realm. Such instruments are necessary both for comparability of results and for stimulation of research; witness the invigorating effects on research of the F Scale, the Minnesota Multiphasic Inventory, and the need achievement scoring scheme. Mention of McClelland's need achievement scoring scheme should remind us, too, that projective and other indirect techniques might answer many of these measurement requirements—especially for such sensitive and subtle variables as conformity needs.

Finally, the definitive interdisciplinary case study of desegregation has yet to be started. Properly buttressed by the necessary foundation aid, such a study should involve comparisons before, during, and after desegregation of a wide variety of communities. The interdisciplinary nature of such an

undertaking is stressed because desegregation is a peculiarly complex process demanding a broad range of complementary approaches.

Any extensive case project must sample three separate time periods: before a legal ruling or similar happening has alerted the community to imminent desegregation, during the height of the desegregating process, and after several years of accommodation. Without this longitudinal view, desegregation as a dynamic, ongoing process cannot be understood. This time perspective, for instance, would enable us to interpret the fact that an overwhelming majority of Oklahoma whites in a 1954 poll sternly objected to mixed schools, but within a few years has accepted without serious incident integrated education throughout most of the state (Jones, 1957).

A carefully selected range of communities is required to test for differences in the process according to the characteristics of the area. Recent demographic analyses and predictions of the South's school desegregation pattern (Ogburn & Grigg, 1956; Pettigrew, 1957; Pettigrew & Campbell, 1960) could help in making this selection of communities. Comparable data gathered in such a selected variety of locations would allow us to pinpoint precisely the aspects of desegregation unique to, say, a Piedmont city, as opposed to a Black Belt town.

Compare the potential value of such a broad research effort with the limited case studies that have been possible so far. Low budget reports of only one community are the rule; many of them are theses or seminar projects, some remain on the descriptive level, all but a few sample only one time period, and there is almost no comparability of instruments and approach. A comprehensive case project is obviously long overdue.

This has been an appeal for a vigorous empirical look at southern race relations. Despite segregationists' claims to the contrary, social psychological contributions to desegregation research have been relatively meager. There are, however, grounds for hoping that this situation will be partly corrected in the near future—particularly if psychologists get busy.

Foundations appear to be re-evaluating their previous reluctance to support such research. And we can re-evaluate our own resignation in the face of barriers to conduct investigations in this area; the tragedy of Little Rock has had a salutary

effect on many influential Southerners in this respect.

Recognition of the importance of the situation in interracial behavior and the full exploitation of the attitude concept can remove inadequacies in the traditional psychological approach to the study of race. In this connection, an extended case for considering conformity as crucial in the Negro attitudes of white Southerners was presented and a new concept—the latent liberal—introduced. One final implication of this latent liberal concept should be mentioned. Some cynics have argued that successful racial desegregation in the South will require an importation of tens of thousands of psychotherapists and therapy for millions of bigoted Southerners. Fortunately for desegregation, psychotherapists, and Southerners, this will not be necessary; a thorough repatterning of southern interracial behavior will be sufficient therapy in itself.

#### REFERENCES

- ADORNO, T. W., FRENKEL-BRUNSWIK, ELSE, LEVINSON, D. J., & SANFORD, N. *The authoritarian personality*. New York: Harper, 1950.
- ALLPORT, G. W. *The nature of prejudice*. Cambridge, Mass.: Addison-Wesley, 1954.
- ASCH, S. E. Effects of group pressure upon the modification and distortion of judgments. In H. Guetzkow (Ed.), *Groups, leadership and men*. Pittsburgh: Carnegie, 1951.
- BIESANZ, J., & SMITH, L. M. Race relations of Panama and the Canal Zone. *Amer. J. Sociol.*, 1951, 57, 7-14.
- CLARK, K. B. Desegregation: An appraisal of the evidence. *J. soc. Issues*, 1953, 9, 1-76.
- COBB, S. W. Desegregation: A psychological analysis. *Amer. Psychologist*, 1957, 12, 1-13.
- CRUTCHFIELD, R. S. Conformity and character. *Amer. Psychologist*, 1955, 10, 191-198.
- DABNEY, V. The violence at Little Rock. *Richmond Times-Dispatch*, 1957, 105, September 24, 14.
- DAVIS, A., GARDNER, B., & GARDNER, MARY. *Deep South*. Chicago: Univer. Chicago Press, 1941.
- DOLLARD, J. *Caste and class in a southern town*. New Haven: Yale Univer. Press, 1937.
- FESTINGER, L. An analysis of compliant behavior. In M. Sherif & M. O. Wilson (Eds.), *Group relations at the crossroads*. New York: Harper, 1953.
- FESTINGER, L. *A theory of cognitive dissonance*. Evanston, Ill.: Row, Peterson, 1957.
- HARDING, J., & HOGREFE, R. Attitudes of white department store employees toward Negro co-workers. *J. soc. Issues*, 1952, 8, 18-28.
- HARTLEY, E. L. *Problems in prejudice*. New York: King's Crown, 1946.
- HYMAN, H. H., & SHEATSLEY, P. B. Attitudes toward desegregation. *Scient. Amer.*, 1956, 195, 35-39.
- JONES, E. City limits. In D. Shoemaker (Ed.), *With all deliberate speed*. New York: Harper, 1957.
- KELMAN, H. C. Compliance, identification, and internalization: Three processes of attitude change. *J. conflict Resolut.*, 1958, 2, 51-60.
- KELMAN, H. C. *Social influence and personal belief*. New York: Wiley, 1961.
- KILLIAN, L. W. Southern white laborers in Chicago's West Side. Unpublished doctoral dissertation, University of Chicago, 1949.
- KNAPP, R. H. A psychology of rumor. *Publ. opin. Quart.*, 1944, 8, 22-37.
- LOGAN, R. W. The United States Supreme Court and the segregation issue. *Ann. Amer. Acad. Pol. Soc. Sci.*, 1956, 304, 10-16.
- MILTON, O. Presidential choice and performance on a scale of authoritarianism. *Amer. Psychologist*, 1952, 7, 597-598.
- MINARD, R. D. Race relations in the Pocahontas coal field. *J. soc. Issues*, 1952, 8, 29-44.
- OGBURN, W. F., & GRIGG, C. M. Factors related to the Virginia vote on segregation. *Soc. Forces*, 1956, 34, 301-308.
- PETTIGREW, T. F. Demographic correlates of border-state desegregation. *Amer. sociol. Rev.*, 1957, 22, 683-689.
- PETTIGREW, T. F. Personality and sociocultural factors in intergroup attitudes: A cross-national comparison. *J. conflict Resolut.*, 1958, 2, 29-42.
- PETTIGREW, T. F. Regional differences in anti-Negro prejudice. *J. abnorm. soc. Psychol.*, 1959, 59, 28-36.
- PETTIGREW, T. F. Social distance attitudes of South African students. *Soc. Forces*, 1960, 38, 246-253.
- PETTIGREW, T. F., & CAMPBELL, E. Q. Faubus and segregation: An analysis of Arkansas voting. *Publ. opin. Quart.*, 1960, 24, 436-447.
- PROTHRO, E. T. Ethnocentrism and anti-Negro attitudes in the deep South. *J. abnorm. soc. Psychol.*, 1952, 47, 105-108.
- RABB, E., & LIPSET, S. M. *Prejudice and society*. New York: Anti-Defamation League of B'nai B'rith, 1959.
- REITZES, D. C. The role of organizational structures: Union versus neighborhood in a tension situation. *J. soc. Issues*, 1953, 9, 37-44.
- ROPER, E. United States anti-Semites. *Fortune*, 1946, 33, 257-260.
- ROPER, E. United States anti-Semites. *Fortune*, 1947, 36, 5-10.
- ROSE, A. M. Intergroup relations vs. prejudice: Pertinent theory for the study of social change. *Soc. Probl.*, 1956, 4, 173-176.
- SMITH, C. U., & PROTHRO, J. W. Ethnic differences in authoritarian personality. *Soc. Forces*, 1957, 35, 334-338.
- SMITH, M. B., BRUNER, J. S., & WHITE, R. W. *Opinion and personality*. New York: Wiley, 1956.
- STOUFFER, S. A., SUCHMAN, E. A., DEVINNEY, L. C., STAR, SHIRLEY A., WILLIAMS, R. M., JR. *Studies in social psychology in World War II*. Vol. 1. *The American soldier: Adjustment during army life*. Princeton: Princeton Univer. Press, 1949.
- THIBAUT, J. W., & KELLEY, H. H. *The social psychology of groups*. New York: Wiley, 1959.
- ZINN, H. A fate worse than integration. *Harper's*, 1959, 219, August, 53-56.

## MEN, MACHINES, AND MODELS<sup>1</sup>

ALPHONSE CHAPANIS

*Johns Hopkins University*

THE history of psychology is a tortuous, winding road stretching back through thousands of years in time. If we look back along it we can make out many instructive features about the road itself, the signs along it, and the terrain and climate through which it has brought us to this present moment. One thing which interests me greatly is that the highway which we call the history of psychology is littered with the wrecks of discarded models.

Aristotle, that venerable philosopher to whom we trace so much of our ancestry, made eloquent use of physical and mechanical analogies over two thousand years ago. See, for example, how he explains our ability to remember:

Evidently we must regard this . . . as similar to a painting. For an active stimulus stamps on the soul a sort of imprint of the sensation, analogous to stamping with a seal-ring. For this reason, too, persons who are deeply moved by passion or by ardour of youth do not remember, just as if the effort and the seal were applied to running water. In other persons, because of their worn-out condition, like old buildings, or because of the hardness of their receptive principle, no impression is made (Hammond, 1902, p. 199).

Although it would not serve my purpose to review with you the history of mechanistic models which have been applied to the human organism, it is interesting to see how persistently and regularly they keep reappearing. For example, Descartes, inspired perhaps by the hydraulically operated, moving figures which were then in vogue in some of the public gardens, wrote in 1650:

It is to be observed that the machine of our bodies is so constructed that all the changes which occur in the motion of the spirits may cause them to open certain pores of the brain rather than others, and, reciprocally, that when any one of these pores is opened in the least degree more or less

than is usual by the action of the nerves which serve the senses, this changes somewhat the motion of the spirits, and causes them to be conducted into the muscles which serve to move the body in the way in which it is commonly moved on occasion of such action; so that all the movements which we make without our will contributing thereto . . . depend only on the conformation of our limbs and the course which the spirits, excited by the heat of the heart, naturally follow in the brain, in the nerves, and in the muscles, in the same way that the movement of a watch is produced by the force solely of its mainspring and the form of its wheels . . . (Rand, 1912, pp. 172f.).

This was followed almost exactly a century later (1748) by LaMettrie's *L'Homme Machine*, a title which in turn was reincarnated exactly two centuries later in an edition of Carlson and Johnson's (1948) *The Machinery of the Body*.

There appears to be a certain pattern in all this activity. Like Descartes, modelists seem to be inspired by the latest physical theories and playthings of the times. Newton's mechanics brought forth models of man which treated him simply as a machine made up of levers and similar linkages. Watt's steam engine and the development of thermodynamics produced models of man which viewed him as nothing but a complicated heat engine. When servomechanisms mushroomed during World War II we heard that man is nothing but a servosystem. Somewhat more recently communication theory has been translated into models which purport to show that man is only an information-handling system.

*The contemporary status of psychological models.* By and large, the very old models of man have been tried, found wanting, and have long since been discarded. They are, to be sure, resurrected and discussed from time to time by the historians of psychology, but in the light of contemporary knowledge they usually appear quaint, naive, and amusing. Even some of the newer models of man have been under test long enough so that they are also beginning to lose some of their original aura and enchantment. The servomodel, for example, about which there was so much written only a decade or two ago, now appears to be headed toward its proper position as a greatly oversimplified, inadequate description of certain restricted aspects of

<sup>1</sup> Based on the Presidential Address delivered to the Society of Engineering Psychologists at the sixty-eighth Annual Convention of the American Psychological Association, Chicago, Illinois, September 5, 1960. Preparation of this paper was supported by Contract Nonr-248(55) between the Office of Naval Research and Johns Hopkins University. This is Report No. 11 under that contract. Reproduction in whole or in part is permitted for any purpose of the United States Government.



man's behavior. When the model of man as an information-handling system first hit psychology everyone was measuring everything in bits. In today's scientific market, it is becoming apparent that the information model was greatly overvalued.

Despite this sobering history it seems to me that models are flourishing as never before in psychology. Everyone is constructing models of all sorts of things in experimental psychology. Indeed, it is almost as though there was a special form of magic attached to the word "model." Things which 10 years ago would have been identified with more ordinary words like hypothesis, theory, hunch, and empirical equation, are now very often called models simply because it is the thing to do.

Physical analogies are now even firmly implanted in our everyday speech. We say that a person may, at various times, be "all wound up," "tight as a drum," or "breathing fire." His "thread of life" is to some extent dependent on "the wheel of fortune." He works in a "pyramidal organization" and finds himself protected by the "checks and balances of the American Constitution." That such models carry over even into the arts is attested by the title of a recent Broadway hit, *I am a camera*.<sup>2</sup>

*Models in operations research.* In this long, colorful, and rich history we can find justification enough for a systematic inquiry into the role of models in the development and prosecution of our own specialty. But there is even more reason than this for us to look at models carefully. Engineering psychology, it seems to me, has much in common with operations research (OR), and operations researchers claim that model building is indispensable to the conduct of their work.

Operations researchers are almost as bad as psychologists when they feel impelled, or compelled, to define what it is they do. I use the following definition by Beer (1959) primarily because it agrees

so closely with my own ideas of what OR is:

Operational research is the attack of modern science on problems of likelihood (accepting mischance) which arise in the management and control of men and machines, materials and money in their natural environment. Its special technique is to invent a strategy of control by measuring, comparing and predicting probable behaviour through a scientific model of a situation (pp. 16f.).

To examine more closely how engineering psychology and OR overlap would be too much of a diversion for me to undertake here, especially since I have recently had occasion to present my views on this topic in another place (Chapanis, 1961). Nonetheless, I think that most of us would agree that as engineering psychologists we are also concerned with "the management and control of men and machines . . . in their natural environment." To the extent that this is true I feel that the two disciplines have something in common. Moreover, I feel that this affinity will increase, rather than decrease, in the next few decades.

But notice the second sentence of Beer's definition. OR claims that its special technique involves the use of scientific models. If you have ever worked with operations researchers you have already discovered for yourself, I am sure, how much emphasis they put on the construction of models. Ackoff (1956), one of the leaders in the field, has formalized the steps involved in an OR attack on a problem in this way:

1. Formulating the problem
2. Constructing a mathematical model to represent the system under study
3. Deriving a solution from the model
4. Testing the model and the solution derived from it
5. Establishing controls over the solution
6. Putting the solution to work

In contrast to what we see in our sister field of operations research, engineering psychology is characterized by the paucity of its models and by its almost complete avoidance of model building as a method for the solution of its problems. Perhaps it is this state of affairs which led Conover to say recently that in his opinion one of the "most critical problems in human factors today" is the development of a "truly useful mathematical model of human behavior . . . that can be utilized in the analysis of man-machine systems" (Simon, 1959).

This divergence in methods of attacking man-machine problems is so striking that it constitutes another important reason for us to look closely at

<sup>2</sup> Parenthetically, models are not unidirectional since living organisms are often used as models for physical and mechanical systems. Note that cities "grow," due undoubtedly to the highways which serve as their "arteries." Aircraft, like birds, "fly," and automobiles, like horses, have always had "to be broken in." Satellites come equipped with "eyes," while missiles "seek" and destroy their targets. And, of course, nowadays we have machines which are electronic "brains," and so can "think" and "play" chess. Biological models are also used in the study of larger structures and organizations (see, for example, Haire, 1959). My interest here, however, is in models of biological structures and not in biological models.



models in general. Are we overlooking an important technique? What are models anyway? Exactly what functions do they serve? What are some of the dangers involved in their use? These are some of the questions which have motivated me to write about "Men, Machines, and Models." When I have finished I hope that I may have helped you to formulate your own answers to these questions.

#### WHAT EXACTLY ARE MODELS?

As a point of departure, let us see if we can find a satisfactory definition of the word "model." Usually when you have the problem of arriving at a precise definition, you turn to a dictionary for help. In this case, unfortunately, that ordinarily reliable standard of English expression turns out to be of singularly little help. *Webster's* unabridged dictionary (Neilson, Knott, & Carhart, 1955), for example, gives 15 definitions of the word model, none of which seems particularly consonant with the kind of model we mean when we speak of a "man-machine model." Among other things, Webster says that a model may be:

- A person who poses
- A copy, as "She is the *model* of her mother."
- A woman who displays costumes to customers
- The original pattern according to which other items are made
- A tool used in molding cornices
- The curvature in the back and belly of such musical instruments as the violin
- An example to be imitated, as a *model wife*
- A miniature representation of a thing

Of these possibilities, only the last one mentioned above seems to approximate the sense in which we have used the word model so far. Even in this case, however, it appears that the dictionary definition implies rather concrete *miniature* representations, such as model airplanes, model ships, and the like, rather than the symbolic representations to which the word model is often attached these days.

Another standard reference source, the 1959 *Encyclopaedia Britannica*, contributes little more of value to us. The article on "Models and Model-making" in that work discusses such things as burial models, toys, models in the motion picture industry, models for teaching and recognition training, models of airplanes for wind tunnel tests, and models of factories for testing layouts, lines of flow, and operating efficiency.

Perhaps the most important conclusion to be

drawn from this brief excursion into documentation is that the scientific and engineering models with which we are concerned have a very special meaning, a meaning which has not yet found its way into the common English language.

If we turn to the model builders themselves for help in this definitional problem, we find ourselves no less confused. Models, we find from reading the literature, come in a bewildering variety. There are mechanical models, true models, adequate models, distorted models, dissimilar models, static models, dynamic models, structural models, iconic models, analog models, symbolic models, material models, formal models, mathematical models, and analytic models—just to name a few. Some authors avoid the problem. Underwood (1957), for example, starts his discussion of models by saying frankly: "I am not going to state a specific definition . . ." (p. 257). Other more philosophical writers have, frankly, left me floundering in a maelstrom of polysyllabic and largely incomprehensible words. For this reason I have abandoned all prior definitions of the word model in favor of one which makes sense to me. It is this:

#### Models are analogies.

Scientific or engineering models are representations, or likenesses, of certain aspects of complex events, structures, or systems, made by using symbols or objects which in some way resemble the thing being modeled.

It seems to me that this definition divests the word of much of the magic which seems to have become attached to it recently, and exposes at once the basic strengths and weaknesses of models. It suggests some of the reasons why models are useful in scientific and engineering work, but at the same time hints at some of the dangers and fallacies involved in their construction and use. But first, some amplifying remarks about kinds of models.

*On the basic kinds of models.* One can find almost as many classifications of models as there are model builders. In an attempt to get at essentials again I would assert that there are only two basic kinds of models: replica models and symbolic models. Although the distinction between the two kinds of models is not always sharp, it is generally possible to classify models as one or the other.

The essential thing about replica models is that they look like the thing being modeled in some respect. I use the words "look like" here in a very loose sense to convey the general idea of a pic-

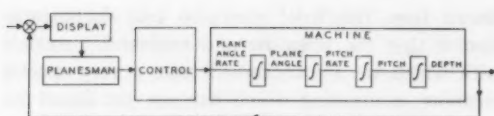


FIG. 1. A symbolic model of a closed-loop tracking system.

torial representation. A globe is a replica model of the earth because, in some respects, it looks like the earth. A model of an atomic submarine is a replica model because it looks like the real thing. Replica models are material models; they are, in short, tangible. Very often a replica model is made with a change in spatial or temporal scale. A replica model of the earth is smaller than the earth itself; a replica model of the atomic structure of uranium, on the other hand, is larger.

Symbolic models are intangible in the sense that they make use of ideas, concepts, and abstract sym-

bols to represent the objects being modeled. The model of man in a closed-loop tracking system (Figure 1) is a symbolic model. The model does not look at all like the real thing. Instead, lines and arrows are used to symbolize, by analogy, the flow of information from one element in the system to another. The major elements of the system are symbolized by blocks, and the movement of the vehicle itself (a submarine in this case) through a fluid medium is symbolized by mathematical symbols, integral signs. As should be apparent, mathematical models form a subclass of symbolic models.

Models may, of course, be mixed, that is, combine both replica and symbolic features. As a model of the earth, a globe is a replica model to the extent that it is spherical in shape and that the land and water masses are correctly scaled on the surface of the model. But a globe contains sym-

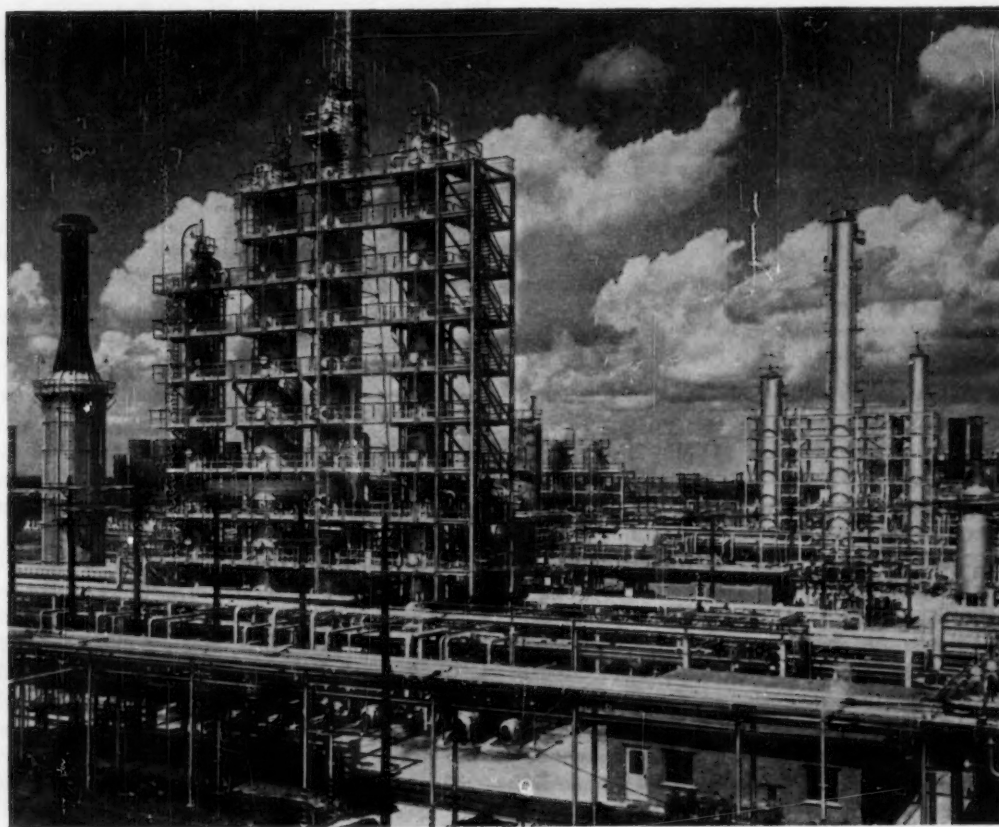


FIG. 2. The gas recovery and fractionating unit in a modern oil refinery. (The operation is controlled automatically by instruments in the control house, lower right.) (Courtesy of the Humble Oil and Refining Company)

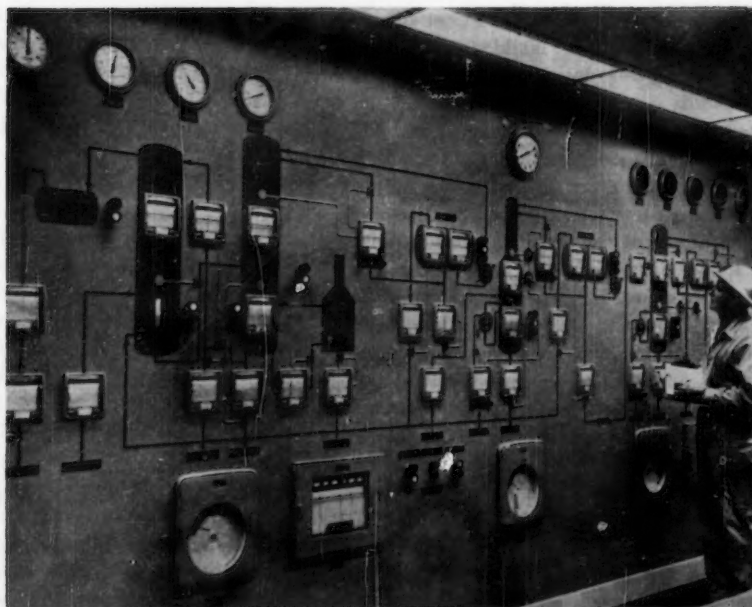


FIG. 3. The major pieces of equipment in the refinery illustrated in Figure 2 are represented on this graphic panel in the control house. (Courtesy of the Humble Oil and Refining Company)

bolic features because, for example, color codes are used to represent the depths of the oceans and the heights of land masses.

*Some things that are and are not models.* With these definitions before us, we can see that some things which are not called models in human engineering work could properly be so classified. Many types of displays, for example, clearly fall in this category. Figure 2 shows the gas recovery and fractionating unit in a modern oil refinery, and Figure 3 the graphic panel in the control house from which the operation of the entire refinery unit is monitored and controlled. This graphic panel is a true *visual display* in the human engineering sense of the word, but it is also a *model* in our present sense of the word. The panel models or represents the major pieces of equipment in the refinery unit, the direction of flow of hydrocarbons in the interconnecting pipes, and state (temperature, pressure, and rate of flow) of the process at various points. Although the panel contains both replica and symbolic features, the latter predominate.

Some other things which we find commonly in human engineering work are mock-ups, simulators, mannikins, and training devices. All are properly

models, according to my way of thinking. That these essential identities are recognized in some other places is shown by the following quotation which I have extracted from Paragraph 3.4.5 of Signal Corps Technical Requirement SCL-1787A, "Human Factors Engineering for Signal Corps Systems and Equipment" (13 April 1959):

Mock-ups shall be employed wherever essential to detail a human task or work-space layout. Mock-ups may vary from mathematical models to simple drawings of appropriate scale to three-dimensional simulators . . .

The fact that I consider certain visual displays, mock-ups, simulators, etc. to be true models does not mean that I am in favor of our calling them models. Too many things get called models these days and by and large engineering psychologists get along fine with their present system of names. When we consider the advantages and limitations of models later, however, we should keep in mind these models-which-are-not-called-models.

The word model, as I have already intimated, is overworked and I am much more concerned about things which are called models, but should be called other things. According to some of my OR friends, every mathematical equation, no matter how sim-

ple, and every curve fitted to an empirical set of data is a model (see, for example, Naddor, 1960). There is some logic in this position because, as Stevens (1951) points out so capably, the formal rules of mathematics are arbitrary conventions. They constitute a formal model, or rather a set of formal models (because there are different kinds of mathematics in existence) which often can be used to represent some aspect of the empirical world.

Nonetheless, I think it is possible to carry things too far. We have good words—"equations," "empirical equations," "rational equations," "fitted curves," and the like—to refer to many of our symbolic operations and I think there is much to be gained in precision of expression by using them. Recently, for example, I noted a title about a model of hypothesis behavior in discrimination learning (Levine, 1959). When I read the article, however, I was disappointed to find that the author's "model" was primarily an empirical method for solving a set of simultaneous equations. If we were to follow his example we should start identifying as models the normal equations we use for fitting curves by the method of least squares. Such loose and indiscriminate use of the word model is misleading and imprecise. We already have more exact ways of referring to these techniques. In this opinion, I realize that I am almost a lone voice speaking against the *Zeitgeist* of the times. Al-

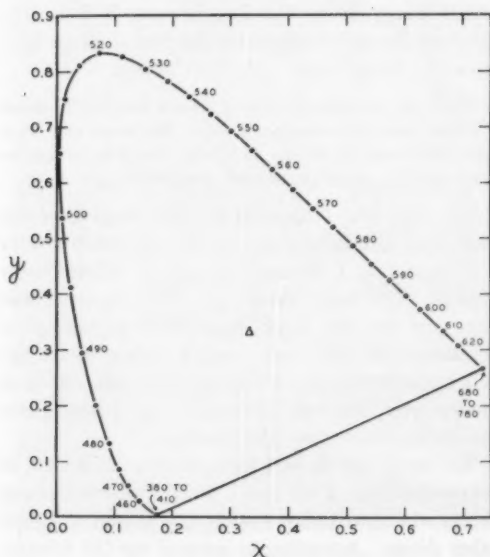


FIG. 4. The CIE  $xy$  chromaticity diagram.

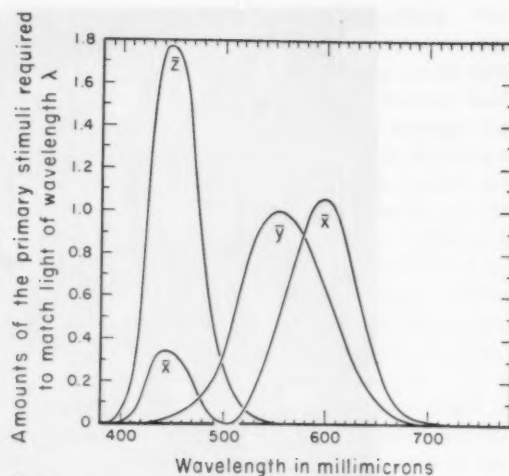


FIG. 5. Standard CIE tristimulus values of unit energy.

though I have no hope of reversing the trend, I can at least speak out in protest.

*On models versus theories.* There is also, it seems to me, much confusion between models and things which a short while ago were more often referred to as generalizations, hypotheses, and theories. In part this situation probably arises because the word theory has so many different connotations.<sup>3</sup> Still there is an essential difference between theory and model, and it is well to keep this distinction in mind.

A model is an analogy and no one expects an analogy to be completely accurate. When we use an electronic computer as a model for the brain, we obviously do not mean that our heads are full of transistors, wires, soldered connections, and magnetic cores. Nor do we believe for a moment that nerve impulses in the brain travel with the speed of electrical impulses in the computer. Neither do we grant that nerve spikes look like or have the manufactured precision of electrical potentials emanating from a power supply. With a model it is not even important that any of these conditions be true, for a model can tolerate a considerable amount of slop. It is only an analogy, a statement that in some ways the thing modeled behaves "like this." Modeling is playing a kind of child's game—a grown-up sophisticated version of a child's game to be sure, but a game nonetheless. The game is called "Make believe."

<sup>3</sup> See, for example, the fine discussion by Boring (1953) on this question.



Theory, on the other hand, is a conceptual system which attempts to describe the real thing. The basic elements, or pieces, of a theory are actually supposed to be there in the thing about which you are theorizing and they are supposed to behave the way the theory says. Whereas a model can tolerate some facts which are clearly not in accord with it, facts which do not agree with theory are fatal to the theory.

This distinction is so important that I want to illustrate with a familiar example: the CIE system<sup>4</sup> of colorimetry. As you know, the CIE system is a valuable tool in engineering psychology for specifying colors, for calculating the transmittance of filters and the reflectance of colored surfaces, and for predicting how certain combinations of filters and lights will look. The *xy* chromaticity diagram (Figure 4) is a kind of chart or map of color space and is one of the end products of the system. The system is based on what is called a standard observer, a fictitious person whose visual characteristics are shown in Figure 5.

I think we would have to agree that the CIE system is a genuine model, a symbolic model, a mathematical model.<sup>5</sup> From the standpoint of our present discussion, however, perhaps the most important thing to say about the CIE system (or model) is that it is wrong. We have known this for years. It fails, for example, to predict adequately the luminances of highly saturated hues (see, for example, Chapanis & Halsey, 1955). In addition, the visual characteristics of the standard observer (Figure 5) are mathematically derived functions which were arbitrarily contrived to make certain kinds of computations convenient and simple. No one for a moment believes that any real human eye has these characteristics. For these and other reasons, no one today would dignify the CIE system with the title of "a theory of color vision." There are just too many facts which are not in accord with the CIE model. Despite these inadequacies, take note also that there are no serious movements underway\* to scrap the CIE system. It is far too useful for that. Models, in a word, are judged by criteria of usefulness; theories, by criteria of truthfulness.

<sup>4</sup> Commonly referred to by its older designation of ICI system.

<sup>5</sup> Here again I am not proposing that we start calling the CIE system a model; its present title serves very well indeed.

#### WHAT GOOD ARE MODELS?

Enough now of definition. What good are models? Models, I think, serve a number of useful functions.

*Models describe and help us to understand complex systems or events.* First and foremost, models describe complex systems or events in simple terms so that we can more easily understand them. They do this essentially by replacing intricate and complex systems with simpler and more familiar analogies. In this role models are indispensable teaching aids at every level of instruction from the nursery school through the university. In fact, this use of models is so commonplace and so well accepted that we can easily lose sight of it in any systematic treatment of the subject. Let us look quickly at a few examples.

The precise timing and sequence of events which transpire inside an internal combustion engine can be slowed down in a model so that its action becomes readily comprehensible. The movement of the planets in the skies can be speeded up in a model so that years or even centuries are compressed within reach of the human memory span. Models of the human body help the student to see the intricate organization and arrangement of our internal organs. Models of the earth help the student visualize and understand geodetic relation-

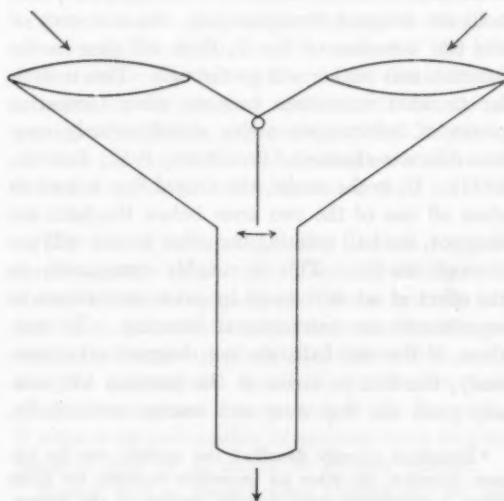


FIG. 6. Broadbent's model of human attention. (After Broadbent, 1957)



ships with a clarity which mere words or symbols cannot hope to match.

We must not get the idea, however, that models are useful only in describing tangible structures and systems. They can also be used to describe theories, concepts, and ideas. A first-rate example of such an application is Broadbent's (1957) mechanical model for human attention.<sup>6</sup>

The model consists merely of a Y shaped tube (Figure 6), mounted vertically, and a set of small balls. Each ball has a number so that it can be readily identified. The Y tube has a narrow stem which will just take only one ball, though the branches are wider. At the junction of the stem and branches is a hinged flap which normally hangs straight downward, but which can be pivoted about its upper edge so as to close off either branch of the Y.

In this model the balls represent information from various stimuli. The branching arms represent different sensory channels. For example, one arm might be the eyes, the other the ears. Or, one might be one ear, the other the other ear. The bottom of the Y represents a response output, so that the process of dropping a ball into the arms and observing its emergence at the bottom is analogous to that of delivering a stimulus to some sense organ and observing a response.

The action of this model is, in some ways, analogous to the reception and processing of information from various sense channels. For example, if two balls are dropped simultaneously, one into each of the two branches of the Y, they will jam in the junction and neither will go through. This is similar to what sometimes happens when competing pieces of information arrive simultaneously over two different channels (Broadbent, 1952; Poulton, 1953). If, in the model, the hinged flap is used to close off one of the two arms before the balls are dropped, the ball entering the other branch will get through readily. This is roughly comparable to the effect of set introduced by prior instructions in experiments on multichannel listening. To continue, if the two balls are not dropped simultaneously, the first to arrive at the junction will usually push the flap over and emerge successfully.

<sup>6</sup> Broadbent actually described two models: one for human attention, the other for immediate memory, the latter being a somewhat more complex version of the former. Since both serve the same function, I shall discuss only one of them.

This is similar to what happens when messages do not arrive simultaneously in studies of multichannel listening (Spieth, Curtis, & Webster, 1954).

Some of the other experimental findings which can be simulated in this model are the reception and processing of stimuli of different intensities (Berlyne, 1950; Broadbent, 1954), the reception of information over previously quiet versus previously active channels (Hyman, 1953; Poulton, 1956), the effects of random versus systematic patterns of presentation (Webster & Thompson, 1953), and the effects of various speed and load stresses (Conrad, 1951; Mackworth & Mackworth, 1956).

Let us summarize now what this model does. First, because it is such a simple mechanical analog it helps us understand Broadbent's theoretical views on information processing.<sup>7</sup> Second, it is a convenient mnemonic device for recalling and integrating the results of a number of related experiments. It is, in short, a kind of crutch to help us understand and to lead us gently into a more formal, rigorous theory of human information processing. Broadbent himself claims no more for the model than this.

*Models help us learn complex skills.* Closely allied to the above is the use of models, or training devices, for teaching specific skills. Models for this purpose range from extremely simple ones (aircraft silhouettes for recognition training) through enormously complex, full-scale models of submarines, control rooms, aircraft cockpits, or control consoles like those shown in Figure 3. The brevity of this section should not be taken to mean that this use of models is relatively unimportant, but rather that it is too well-known to merit any extended discussion.

*Models provide the framework within which experiments are done.* The third role of models is particularly pertinent to engineering psychologists because so much of our research originates from, and is motivated by, real-world problems. What do we do when we do an experiment in engineering

<sup>7</sup> In essence, Broadbent feels that the human perceptual system has such a limited capacity that a selective operation must be performed on all inputs to the system. The purpose of the selection operation is to make efficient use of the nervous system by selecting inputs which have much in common, that is, inputs which contribute little new information. The way in which selections are made depends in part on the organism and in part on the input (physical intensity, earliness in time, absence of recent inputs to the channel, rate and pattern of arrivals, and so on).

psychology? We observe some aspect of man-machine interaction in the real world which looks intriguing and for which we would like to have an empirical answer. We abstract from the real-world situation those variables, independent and dependent, which seem relevant and design an experiment accordingly (Rosenblueth & Wiener, 1945). Sometimes we may even say that we "simulate" the real world in the laboratory; at other times we may say that we use "simulators" in our laboratory experiment. Whatever we say, however, there can be no doubt about one thing: our experimental situation is a model of the real world. To a considerable extent the generality of our experimental findings depends on the fidelity of the model we have made of the real world.

Experiments as models differ from most other kinds of models in at least one important respect. The conclusions drawn from most ordinary models are arrived at by mathematical argument, by the application of formal rules of logic, or by somewhat less rigorous forms of reasoning. The conclusions are *deduced* from the basic concepts, assumptions, relationships, and principles built into the model. It is a tautological technique, because we can get out of the model only what we have already put into it. The conclusions follow inexorably from, and contain no more information than, what we have already put into the model. I like to think of it as something like asking a multiple-choice question. The answer you get is already contained in the question.

When we use experiments as models, however, we interrogate nature for her conclusions. We ask an open-ended question and the answers we can get are almost unlimited in variety.

*Models help us to see new relationships.* Consider the impact of the information model on psychology (Figure 7). Why has this model had such an influence on contemporary psychology? Is it because we have never had a model like this before? Not at all. Go back to some old textbooks in psychology, before communication theory was born, and you will find diagrams like the one in Figure 7. To be sure you will have to cross out the words in Figure 7, and substitute words like stimulus, receptor, nerve cell, effector, and response. But the diagram, the model, is an old one in psychology. Psychologists have been concerned about the way our sense cells encode information for thousands of years. Although they did not call it "encoding,"

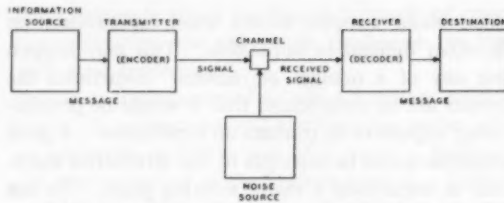


FIG. 7. A symbolic model of a communication system.

they have always identified it as a central problem in psychology. Similarly, psychologists have long been worried about the correlation between stimuli and responses, or, if you want to translate this into faddish terms, the information transmitted from input to output. No, I think we have to conclude that the novelty of the model is not what has made it so important.

The real reason for the impact of this model on psychology is that it made us see some old problems in new ways. When information theory was developed and applied to switching networks and to communication systems, it turned out that there was something called channel capacity which described the amount of error-free information that could be transmitted over a wire, the air waves, or along a carrier signal. This was something which happened in machines. But since the human operator could be squeezed into the same pattern, an interesting question immediately popped into a lot of heads: "Maybe this channel capacity which we find in machines—maybe there's something like that in people too." And, as you know, this idea has generated a lot of informative research. The idea of the measure of information itself, the idea that information was somehow related to the number of possible alternatives, the concept of redundancy—all these came with the model when we borrowed it from the engineers and draped it around our own shoulders.

This role of models in jarring us from our conventional ways of thought (Deutsch, 1948-49) is an important one—especially if these new ways of looking at old problems generate research. The results of research—good data obtained from well-designed experiments—invariably outlive the models which stimulated the research in the first place. If some of us need models to motivate us to do good research, then by all means let us have models!

*Models help us predict when experiments are impossible.* Another important use of models is to enable the engineer or investigator to make predic-

tions about complex events when experimentation is either difficult or impossible. This may happen for any of a number of reasons. Sometimes the events are so complicated that it would be prohibitively expensive to conduct an experiment. A good example would be attempts to test alternative methods of organizing a manufacturing plant. To use rigorous methods of controlled experimentation for such a problem might well exhaust the financial resources of the company.

Another situation in which the engineer has to make predictions without the benefits of experimentation occurs during the design and development of most complicated systems. Thus, even though the Polaris system has not yet been con-

structed and put into operation<sup>\*</sup> it is important for the system engineer to know what will probably be the most efficient way of maintaining the system after it has been put into operation. In fact, this information is needed early in the development of the system because decisions about maintenance policy determine how the equipment should be designed for maintenance purposes, what kinds of test equipment and auxiliary equipment should be provided, what sorts of repair facilities will be required, the number of spares that should be stocked in the various operational units, and the number and quality of maintenance men that should be recruited and trained.

<sup>\*</sup> At the time of this writing.

TABLE 1  
VARIABLES AND COSTS ASSUMED IN CONSTRUCTING A MODEL OF VARIOUS MAINTENANCE  
POLICIES FOR THE POLARIS FIRE CONTROL SYSTEM  
(Mosback, 1959)

Item	Cost
Weighted average price per board	\$241
Six comprehensive testers (if purchased as a lot)	\$206,000
Six testers for repairing shorted transistors only	\$41,200
One comprehensive tester (repair on tender policy)	\$42,500
Cost of repairman per year	\$12,000
Effective interest rate	33 $\frac{1}{2}$ %
Price reduction for increased order size	$q^{-.250}$
Life of system (3 cruises/year; 1,000 operating hours/cruise)	5 years
Number of hours worked per day per repairman	.7(8) = 5.6 hours
Space for repair facilities on submarine	150 feet <sup>2</sup>
Living space per man	120 feet <sup>2</sup>
Cost of space per cruise	\$30/feet <sup>2</sup>
Volume of storage space per digital board	120 inch <sup>3</sup> (.069 feet <sup>3</sup> )
Expected failure rate per board	.05/1,000 hours per transistor
Salvage value of discarded board	15%
Change in reliability with repeated repair	$R(X + 1) - .152$
Expected time to repair failed board on submarine	1 hour
Expected time to repair shorted transistor	45 minutes
Cost of system being down due to part shortage	\$6,000/hour
Cost of piece parts to repair failed board on submarine	15% cost of board
Cost of piece parts to repair failed board on tender	9% cost of board
Cost of repairmen per failed board on tender	$\frac{1}{2}$ that on submarine
Cost of repairmen per failed board at factory	$\frac{1}{2}$ that on submarine
Cost of transporting failed items to and from factory	10% each way
Number of spares in initial outlay	
Repair on board	86
Repair on tender	1,508
Throwaway	1,131
Expected number of boards used per year with discard	2,238/submarine
Expected shortage hours per submarine per year	
Repair on board	0.23
Repair on tender	3.30
Throwaway	3.30

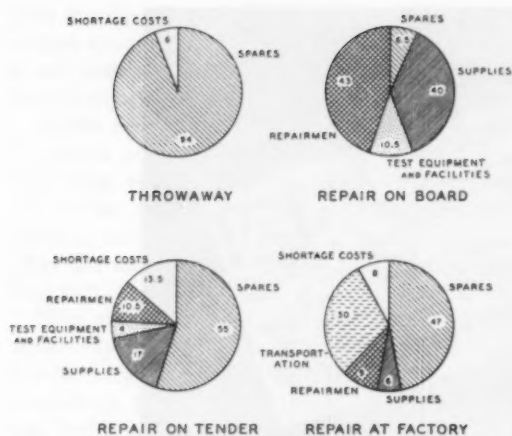


FIG. 8. The relative costs of four maintenance policies for the Polaris Fire Control System. (After Mosbaek, 1959)

If a particular subassembly is to be a repairable unit it should be designed according to good human engineering principles: it should be easily accessible to the maintenance man, test points should be provided within the assembly, parts and components should be properly coded and labeled, and so on. If, on the other hand, the subassembly is to be designed as a throwaway unit these human engineering considerations can be largely disregarded. Here, then, is a situation in which decisions must be made before the system is built. Experimentation is clearly out of the question because the system is not yet completed, and the cost of such experimentation would undoubtedly far exceed the cost of building the system in the first place. Faced with such obstacles the system engineer may turn to a model as the only feasible method of quantifying the alternatives open to him.

The model constructed for the Polaris Fire Control System (Mosbaek, 1959) has a number of instructive features. As you know, the Polaris missile is a two-stage, inertial guidance, solid fuel missile designed to be fired from a submarine below the surface of the water. The purpose of the model was to investigate the most economical maintenance policy for digital boards of the current generation part of the system. These digital boards contain transistors, diodes, resistors, capacitors, and other parts, totaling on the average about 84 parts per board. There are about 25 different types of boards and nearly 1,000 are used in the fire control system. The specific questions asked were: Is it cheaper to repair or discard a defective board? If

it is cheaper to repair the board, is repair on board the submarine, the submarine tender, or the factory most economical?

The analysis assumed an overall system consisting of six submarines and a submarine tender with an expected operating life of 5 years. Although the determination of the various costs is a critical problem in models of this type, I shall not say anything more about it now. Table 1 shows some of the parameter values used in arriving at the decision model used in this study.

One of the immediate and most interesting outcomes of this analysis was to show the importance of various types of costs for alternative maintenance policies. If the boards are designed as throwaway units, then the major item of expense is that of stocking spares (Figure 8). If the boards are to be repaired on board the submarine, then the cost of providing repairmen is the largest single item, with the cost of providing test equipment and facilities becoming a fairly substantial item. If the decision is made to repair the boards at the factory, then transportation of the boards to and from the factory becomes an appreciable item. Figure 8 merely shows how the costs of various maintenance policies are apportioned among the various categories. Figure 9, on the other hand, shows the expected total costs for the four maintenance policies. There it is evident that the cheapest overall policy is that of repairing defective assemblies on board the submarine.

As I remarked earlier, we must not lose sight of the important implications of any of these decisions for the system engineer and the human engineer. A decision to repair defective assemblies on board the submarine means that the system must be designed so that they can be maintained.

*Models assist in engineering design.* Models are

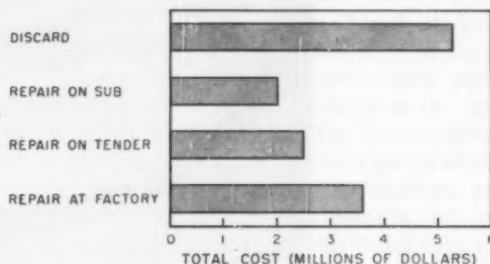


FIG. 9. The expected total costs of four maintenance policies for the Polaris Fire Control System. (After Mosbaek, 1959)



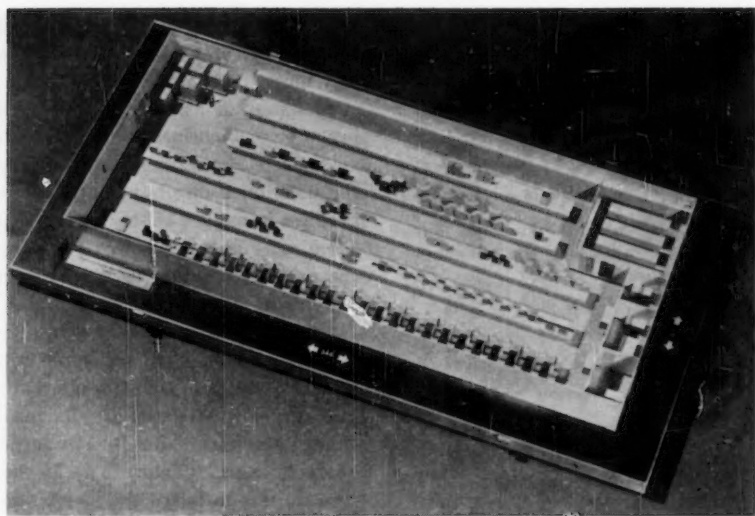


FIG. 10. A replica model of the clean assembly area of a manufacturing plant. (The model was used in the final phases of planning the layout of machines and work areas, and the flow of materials.) (Courtesy of the Bendix Radio Division of the Bendix Aviation Corporation)

also extremely useful in many other types of practical design problems. In studying the layout of a factory and the flow of materials in a production process (Figure 10), or the efficient arrangement of

men and machines in specialized work areas (Figure 11), models and mock-ups help the designer visualize how the final ensemble will look. Such three-dimensional models are much more powerful

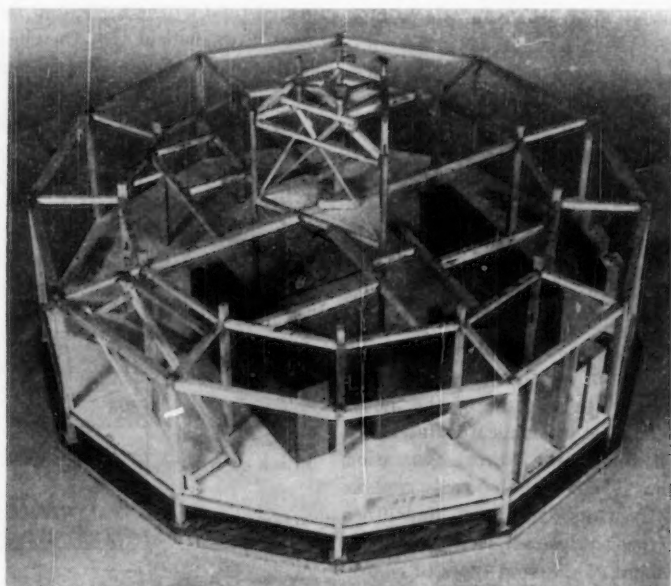


FIG. 11. A replica model of a radar installation used to study the arrangement of men and machines. (Courtesy of the Bendix Radio Division of the Bendix Aviation Corporation)



than drawings or symbolic representations. Many serious design errors are detected by three-dimensional models even after blueprints and plans have been thoroughly checked and approved.

*Models amuse us.* To evaluate properly the role of models in scientific and engineering work the final thing we must do is to recognize clearly that one of the reasons why scientists and engineers spend so much time with them is that they are fun. They are fun to design, fun to build, and fun to look at.<sup>9</sup>

More years ago than I like to remember, I attended my first Annual Meeting of the American Psychological Association while I was still an undergraduate student. The climax of those meetings was Hull's brilliant Presidential Address in which he first enunciated the formal behavior theory which was to have such a profound effect on psychology for the next several decades. In contrast to my memory of it the published version of Hull's address (1937) seems rather dull and dry because, among other things, it makes no mention of the model which he used to illustrate his talk. I can clearly remember the electric effect produced by that demonstration. The model was a suitably impressive collection of wires, lights, switches, and chemicals which, under its master's skillful hand, simulated simple stimulus substitution and forgetting, the effect of the order of stimulation on conditioning, experimental extinction, spontaneous recovery, secondary extinction, irradiation, summation, differentiation, external inhibition, and the reintegration of compound stimuli.

For all its ingenuity, Hull's model,<sup>10</sup> like so many others in psychology, has been long forgotten. Indeed, I have difficulty finding anyone who can remember seeing it or hearing about it. Now that we have almost three decades' worth of perspective with which to look back on this model, what good was it? It yielded no deductive hunches for experimental test. It provided no new insights into

<sup>9</sup> Replica models are, I think, interesting and amusing to everyone, whether he be the inventor, an interested bystander, or a casual passer-by. In the case of most mathematical models, however, I am prepared to argue that it is only the inventor who has fun. The task of wading through many recent symbolic models is, in my opinion, tedious, difficult, and generally unrewarding.

<sup>10</sup> Although I speak of it in the singular, Hull's model actually went through some evolutionary changes—see, for example, Hull and Baernstein (1929), Baernstein and Hull (1931), and Kreuger and Hull (1931).

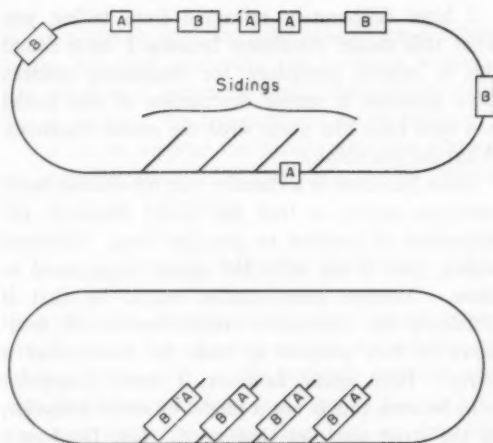


FIG. 12. The initial (above) and terminal (below) arrangement of items in one of Jacobson's (1958) models.

the nature of the conditioned response. In fact, it did not even explain anything. I think the clue to the real function this model served is contained in one sentence which Baernstein and Hull (1931) used when they described it in the literature: "The strikingly mechanical appearance of its behavior [that is, the behavior of the conditioned reflex] offers a challenge to the construction of models which shall display similar characteristics." In short, it is my contention that Hull—an engineer turned psychologist—conceived and carried out the construction of this model primarily for the fun of it.

Let me illustrate my point with one other example, because I think it is important that we be really convinced about this matter. In a fairly recent article Jacobson (1958) describes in great detail the appearance, behavior, and construction of several models simulating a process which, for the moment, I shall not identify. One of these models consists of a large loop of "HO" gauge model railway track (see Figure 12). Inside the loop of track are four sidings. Two kinds of cars, A and B, move along the track. At the start of a demonstration eight cars, four A's and four B's, are placed on the outside loop in a random order. The demonstration starts when the demonstrator pushes a button which sets the eight cars into motion. An elaborate series of levers, switches, magnetic contacts, and relays then sorts out the cars and distributes them on the four sidings so that at the conclusion of the demonstration each siding contains one A and one B car connected together (see Figure 12).

I have deliberately refrained from telling you what this model simulates, because I have found this a helpful procedure for evaluating models. Give someone a simple description of the model and then have him guess what the model simulates. What do you think?

Since Jacobson is a chemist, one reasonable interpretation might be that his model simulates the attraction of positive to negative ions. Unfortunately, that is not what the model is supposed to show. Another interpretation might be that it simulates the assortative redistribution of teenagers as they prepare to leave for home after a party. Here again, however, I must disappoint you, because this is not a model of social behavior, in the strict sense of that word. No, Jacobson's model is supposed to simulate the union of living cells in the process of reproduction!

Now that the secret is out, what function does this model serve? The analogies between the behavior of the model and that of real-life phenomena are so clearly strained that I do not think we need to take them seriously. Unlike Broadbent's model, Jacobson's contributes nothing to our understanding of reproduction. The author recognizes this himself and spends some time pointing up the deficiencies of his models. If you read the article carefully, however, I am sure that you will be left with the same impression as I was. Implicit in the detailed description of circuitry and mechanical details is the truth of the matter: this model was fun to build! Getting those little railway cars to shunt themselves onto the appropriate sidings was an interesting challenge. In addition, the sight of those toy cars moving around has, in the author's words, "spectator appeal."

I want now to clarify my position on this score. I am *not* against fun. In fact, I approve of it heartily. But in our quest for logical order and rational justification of our scientific behavior, we ought not to lose sight of the fact that much of what we do is motivated by the sheer fun of doing it. Scientists are people, too. Doing experiments, building theories, and constructing models are basically fun, in my opinion. Moreover, I am convinced that scientists often entertain models because their models entertain them. If we can once acknowledge this basic fact of life without feeling guilty, we will not then feel compelled to ascribe an important (and perhaps illusory) purpose to every model we see.

# SOME DANGERS IN THE USE OF MODELS

For all of their usefulness, models are subject to some extremely important sources of error. Indeed, we should even go further than this and say: *because* models are so useful in engineering and scientific work it is especially important that we recognize clearly what their limitations are. Only in this way can we avoid being trapped or misled into dangerous and fallacious conclusions. Models have so many limitations that it is difficult to know how to classify them. For purposes of exposition, however, I have assembled them under six major headings.

*Models invite overgeneralization.* In my opinion the worst error committed in the name of models is to forget that at best a model represents only a *part*—and usually only a small part—of the thing being modeled. There is an almost universal tendency to suppose that a model, once it is built or formulated, is more than it is. This shows up in many ways. In certain superficial ways the behavior of an electronic digital computer is something like that of the brain. Once we admit so much, the next step is easy. We forget that this is only an analogy and we lapse quickly into calling the computer a "brain." The next step is equally easy. Now we find ourselves saying, and, I am afraid, believing, that the computer *is* a brain. This is just so much rubbish! A computer is no more a brain than the Palomar telescope is an eye, or a bulldozer a muscle.

Models of the human operator can be convenient and useful. But we must remember that any replica or symbolic model of the human operator is at best a coarse and crude approximation of the real thing. The only reasonably accurate model of a human operator is another human operator. Even then everything we have learned as psychologists warns us that one person is not a good model for another unless the two are identical twins.

It is a difficult thing not to be wafted into a distorted world of illusion and hallucination by the heady and intoxicating fragrance of that magic word—model. My antidote is a simple one. Whenever anyone uses the word *model*, I replace it with the word *analogy*. The result is something like a breath of fresh air, or a cold shower, or some strong black coffee, in clearing the murky cobwebs from the discussion. Try it.

There are two other ways of looking at this same difficulty. One is to say that a model always fails to include certain variables and relationships which

can be found in the thing modeled. Models are always incomplete. This is one reason why transfer of training is never complete when we go from practice on training devices to the real job. It is also part of the reason why the results of human engineering experiments are always subject to some error when we try to apply them to real situations. We must be sure that important variables in the real world were not overlooked in setting up that model of the real world which we call an experiment.

*Models entice us into committing a logical fallacy.* Recall for a moment your freshman college course in logic. One of the classical fallacies which appears in almost every textbook of formal logic involves a simple conditional statement: if A then B. Let us assume for the moment that this statement is true. Now let us also assert that B is true. Does this mean that A is true, too?

In its simple symbolic form the fallacy is immediately apparent. But when it appears in the highly disguised form of a mathematical model, the fallacy is not so easily recognized. Let me put it this way. A mathematical model usually starts with a series of variables, constants, and assumed relationships. These are the A's of our conditional statement. From these is then deduced some consequence or some function of the model. This is the B of our conditional statement. If the deduced consequence or function is found to agree with some function in real life (this is asserting the truth of B) we sometimes find the model maker asserting that this proves the validity of the variables, constants, and assumed relationships which he started out with (the A's). Although everyone knows you can never *prove* a theory, it is easy to forget that this axiom is even more pertinent to models.

There are a number of instructive ways of illustrating this danger. Imagine, for example, that we have a box with two input leads and two output leads. We do not know what is inside the box, but we can vary the inputs and measure the outputs. Our eventual aim is to represent the box as an element in a mathematical model. Let me also tell you secretly that the output of the box,  $y$ , is linked with the input,  $x$ , in the following way:

$$\frac{dy}{dt} + ay = bx \quad [1]$$

If the investigator guesses that the relationship inside the box is:

$$\frac{dy}{dt} + \alpha y = \beta x \quad [2]$$

he can test it by applying some selected input values to the box and measuring the resultant outputs. The outcome of such tests would undoubtedly show that Equation 2 fits the empirical points well.

But let us suppose the investigator had started out with the assumption that the equation linking the two is the following:

$$\frac{d^2y}{dt^2} + \alpha \frac{dy}{dt} + \beta y = \gamma \frac{dx}{dt} + \epsilon x \quad [3]$$

He would also likely find that there is good agreement between this equation and the performance of the box. Moreover, in the presence of noise and random elements  $d^2y/dt^2$  and  $\gamma$  would not, in general, turn out to be zero. Here then are two different equations each of which might fit a selected set of empirical data quite well. If we now use Equation 3 in a mathematical model we might expose ourselves to serious error. For example, putting a feedback loop around Equation 3 could lead a system engineer to conclude that he is dealing with an unstable servosystem. However, if the true equation is not 3 but 1 the system might in fact be stable. The implications of such an error for engineering psychology I leave to you.

*The relationships between variables may be incorrect.* The third reason why models may be in error follows directly from what I have said above. It is that one or more of the functional relationships assumed to hold between critical variables in the model may be incorrect, that is, relationships in the model may not conform to those which actually exist in the object or event being modeled. This danger is one to which models of man are, I think, particularly prone. It is easy to be misled about the way variables are connected in human behavior, even when logic and common sense seem to be on your side (see, for example, Chapanis, 1959, pp. 5f.).

Peters (1957) has a good illustration of this kind of error. His problem was to determine the effectiveness of a tripwired land-mine system under certain operational conditions. In typical OR fashion an analytic model was constructed to predict the effectiveness of the system as a function of several variables. One important variable was the probability that the tripwire would be seen. It seemed logical to assume that an enemy soldier would be able to see a long tripwire placed across his path much better than a short one. As the length of the tripwire is increased indefinitely, however, the probability of detection should level off at some reason-

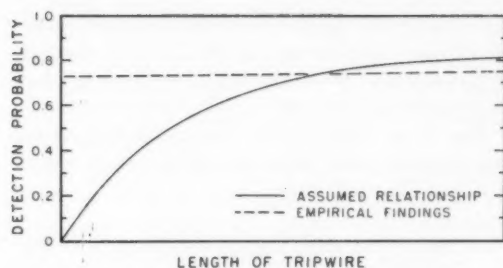


FIG. 13. The solid curve shows a relationship between the length of a tripwire and the probability of its detection which was assumed for an OR model of a land-mine system. The dashed line shows the relationship discovered in an experiment on the same problem. (After Peters, 1957)

ably high value. Figure 13 shows the relationship which was assumed to hold between length of tripwire and detection probability. The solution derived from the model was that the length of the tripwire should not exceed a certain value.

Since Peters was apparently properly sceptical about models, he ran a carefully controlled experiment to check the assumptions on which this critical relationship was based. A simulated minefield was constructed in a slightly wooded area of heterogeneous background. Tripwires were carefully laid out to simulate what might be expected under combat conditions. Each subject was instructed to search for and to try to find a series of concealed tripwires while following a marked path through the minefield. Five hundred and sixty trials were made with 35 subjects and 16 tripwires of 4 different lengths.

The results of these tests showed that the original formulation based upon logic and common sense was erroneous. The probability of detection did not vary with the length of the tripwire! On the contrary, detection probability was a constant over the critical range of lengths tested (see Figure 13). Revision of the model to take account of these empirical findings led to an entirely different solution, namely, that the overall effectiveness of the system could be enhanced by increasing the length of the tripwire substantially.

The example I have quoted above is from a symbolic model, a mathematical model. Similar problems exist in replica models as well. Indeed, engineers know that in making replica models, there must almost always be some basic distortion of the basic variables (see, for example, Murphy, 1950). It is not sufficient simply to reduce the thing being

modeled by some linear scale factor, because this radically alters the relationship between the length, area, and volume of the object. This is often referred to as the "square-cube" law which states that as a body is reduced in size, its area reduces with the square and the volume reduces with the cube of its linear dimension. This, of course, has serious effects on many properties of the model: the rate at which it cools or heats, its stresses and strains in acceleration, and its behavior when moving through liquids. The implications of these distortions for certain human engineering experiments in which scale models are used to represent the human operator are, I think, apparent.

An interesting, and perhaps not entirely trivial, illustration of the operation of this principle is the following: if you make an accurately scaled down model of an electric train, you will find that your model cannot stay on the tracks—the wheel flanges on your model (although accurately scaled) will be too small for the weight and mass of the model.

Underlying all of these considerations are some very basic questions about the validity of the very mathematics we use in our models of man. This is, of course, a very general problem which concerns psychologists whenever they make measurements of any kind. As Stevens (1951) points out, measurement is the process of linking that formal model we call mathematics to discriminable aspects of objects or events. Before we go about measuring things in psychology we have to validate the mathematical model, that is, we have to be sure that the formal rules of whatever mathematics we use have their counterparts in the objects to which the mathematics are applied. Measurements are made at several levels and, whenever we can bring ourselves to face the issue squarely, we are painfully aware of how few psychological phenomena can be measured with anything as sophisticated as an interval scale. Most of our measurements are made with nothing better than an ordinal scale. This means, of course, that such elementary kinds of mathematical manipulations as addition, subtraction, division, multiplication, differentiation, and integration are not valid for these measurements. It is a humbling thought.

*The constants assumed in the model may be incorrect.* The next reason why models may be in error is that the constants assumed for certain parameters in the model may be incorrect. Since these errors are made up in part of simple random



errors of measurement, we can never hope to eliminate them completely. The best we can do is to reduce their magnitude to whatever precision is acceptable for the model. Whenever the model involves man and his characteristics, however, there are some other sources of error we must be concerned with. Several writers have already commented on the fact that psychologists have virtually no universal constants to describe human performance. Even when we can find so-called constants of human behavior we almost inevitably find on closer inspection that the constants have been determined for only one or two subjects, for a completely unrepresentative sample of subjects, or for unrealistic conditions. I have already written in detail elsewhere on some of these problems (Chapanis, 1949; 1959, pp. 235f.). This scarcity of dependable, representative data about human performance will continue to be a source of error in all models involving humans for some time to come.

Even models which do not primarily involve human performance may still be in error because of these difficulties of measurement. Earlier I spoke about the economic model used to evaluate various maintenance policies for the Polaris missile. Although my description may have left you with the impression that it was definite and precise, the model had, nonetheless, a number of uncertainties associated with it. Table 1 shows the parameter values which were used in this model. There you see an assumed failure rate of 0.05 per 1,000 hours per transistor. Since the equipment had not yet been constructed, it was literally impossible to measure this failure rate. At best the analysts could only estimate it from engineering specifications and from past experience with equipment something like that in the Polaris system. This introduces considerable uncertainty in the model because it might actually turn out that the failure rate is only a fraction of that estimated. In addition, as the system matures and design deficiencies are gradually eliminated, the failure rate may decline markedly with time.

To take another example, the model assumes certain shortage costs. A shortage cost is the cost of having a system inoperative for any period of time. In the case of some businesses it is possible to arrive at reasonable estimates of the cost to the company of having a machine or production line idle for a certain length of time. But how does one

estimate the shortage cost for a military system? What is the cost to the nation, or to the world, of having an offensive weapon disabled? I am sure you will have to agree that this is an extremely difficult quantity to measure.

Fortunately, there is a technique which can give us some help in the face of these difficulties. Although it is a procedure used commonly by economists and operations analysts in working with economic or operational models, I cannot find any good illustrations of its application in strictly human or man-machine models. The technique resembles that of making a sensitivity analysis. The parameter which is subject to error is allowed to vary over a wide range of values and the outcome noted. Very often the results then provide some indication of the importance of errors of estimate in the selection of parameter values.

The results of one such test are shown in Figure 14 for the Polaris model. This figure plots the total cost of three alternative policies as the failure rate changes. It shows that a maintenance policy of repairing defective assemblies on the submarine would be the most economical even if the failure rate were only one-quarter of the value originally estimated. If the failure rate were less than about one-quarter of the originally estimated value it would become more economical to repair the assemblies on the tender. Discarding defective assemblies would become economical only if the failure rate were to drop to one-fortieth or less of its initially assumed value. Such an outcome is useful to the system engineer because it tells him that even if a very substantial error had been made in

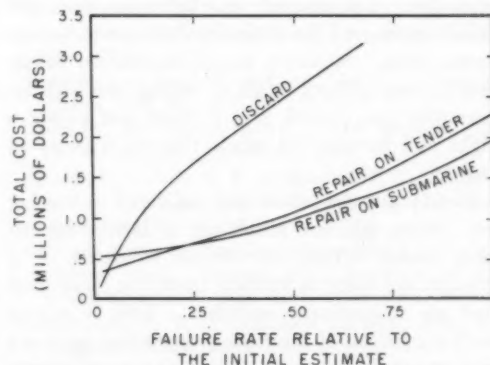


FIG. 14. Total cost of three maintenance policies for the Polaris Fire Control System when the assumed failure rate is allowed to vary over a wide range of values. (After Mosback, 1959)

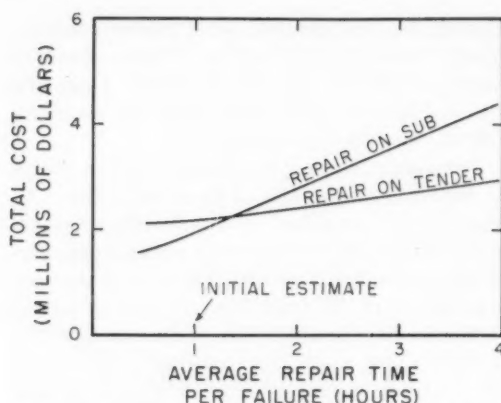


FIG. 15. Total cost of two maintenance policies for the Polaris Fire Control System when the assumed average repair time is allowed to vary over a wide range of values. (After Mosback, 1959)

estimating this parameter, it would still be advantageous to design the system so that the digital boards are repairable. In essence, he can eliminate the possibility of designing the boards as throw-away units.

A second such test is shown in Figure 15. This plots the expected total costs for two maintenance policies as a function of the average repair time per failure. This value is also subject to considerable uncertainty because there is no exact maintenance history on which to base it. The figure shows that if the estimates of repair time were 50% or more larger than originally estimated, repairing defective assemblies on the tender would be a more economical policy. This particular variable is also of interest to the human engineer because the average repair time depends very markedly on how well human engineered the subassembly is for the maintenance man. A poorly human engineered subassembly—one without labels or coding, one with inaccessible components, and without test points—might well increase the repair time by a factor of 2 or 3.

*Models are too often not validated.* Another very serious criticism which can be leveled against many models is that they are not validated, or, if attempts are made to validate them, the procedures used are scientifically valueless. This is not so much a criticism of the models themselves as it is a criticism of the model builders. I am sometimes frankly appalled by the faith which some model builders have in their own powers of analytical and synthetic reasoning when it comes to making mod-

els of human behavior. Those of us who have been in the business of human engineering for any length of time can point to any number of instances of poor human engineering design which originated in somebody's carefully reasoned, logical analysis of a work situation. I will state my bias on this score in no uncertain terms: I will gladly exchange 100 well-informed guesses at any time for the results of one carefully executed experiment.

Even when we find model builders attempting to make some validation of their models we sometimes find them using as scientific evidence the crudest form of observations collected under completely uncontrolled conditions. It is as though the Hawthorne experiments<sup>11</sup> had never occurred! Let us take one real example. Once upon a time the problem of traffic delays at toll booths was tackled by some OR people. They constructed a mathematical model, added it, multiplied it, integrated it, differentiated it, and came out with some conclusions about how the toll booths should be manned and operated. Then came the critical part. Is the model any good? Let us take the authors' own words: "The only way to find out was to try it. If it worked continuously for a week, it should be able to work indefinitely." They installed the new system at a toll collecting site and measured traffic flow and some other things for one week. Although the operation of the new system did not conform entirely to expectations there is no doubt that during that week, conditions were better than they had been previously. So say the authors: "... there is a good deal of satisfaction in seeing the validity of so much work actually established" (Churchman, Ackoff, & Arnoff, 1957). Please understand me. The authors may well have been correct. Their system may indeed have been better. But you will have to agree that this kind of test is *not* a model of scientific inference.

*Model building diverts useful energy into non-productive activity.* My final criticism of model building is that the modeler often becomes so intrigued with the formulation of his models that he constructs them for essentially trivial problems. Having at one's disposal a large electronic computing machine, for example, invites one to try out all kinds of things, because computers are such fun to play with. Considering the state of knowledge within psychology, however, the easiest problems

<sup>11</sup> See Roethlisberger and Dickson (1939) and especially Chapamis (1959, pp. 73f.).

to build models for are essentially unimportant problems. If it gives the modeler pleasure, I suppose we should not complain. But it does seem to me sometimes to be such a waste of talent.

So where do we stand now on the question of models? Should we as engineering psychologists model ourselves after our colleagues in operations research? I leave the answer for each of you to decide for himself. My mind is made up.

## REFERENCES

- ACKOFF, R. L. The development of operations research as a science. *Operat. Res.*, 1956, **4**, 265-295.
- BAERNSTEIN, H. D., & HULL, C. L. A mechanical model of the conditioned reflex. *J. gen. Psychol.*, 1931, **5**, 99-106.
- BEER, S. What has cybernetics to do with operational research? *Operat. res. Quart.*, 1959, **10**, 1-21.
- BERLYNE, D. E. Stimulus intensity and attention in relation to learning theory. *Quart. J. exp. Psychol.*, 1950, **2**, 71-75.
- BORING, E. G. The rôle of theory in experimental psychology. *Amer. J. Psychol.*, 1953, **66**, 169-184.
- BROADBENT, D. E. Listening to one of two synchronous messages. *J. exp. Psychol.*, 1952, **44**, 51-55.
- BROADBENT, D. E. Effects of noises of high and low pitch on behavior. *Med. Res. Council Appl. Psychol. Res. Unit Rep.*, 1954, No. APU222/54.
- BROADBENT, D. E. A mechanical model for human attention and immediate memory. *Psychol. Rev.*, 1957, **64**, 205-215.
- CARLSON, A. J., & JOHNSON, V. *The machinery of the body*. (3rd ed.) Chicago: Univ. Chicago Press, 1948.
- CHAPANIS, A. How we see: A summary of basic principles. In Panel on Psychology and Physiology, Committee on Undersea Warfare, *A survey report on human factors in undersea warfare*. Washington: National Research Council, 1949. Ch. 1.
- CHAPANIS, A. *Research techniques in human engineering*. Baltimore: Johns Hopkins Press, 1959.
- CHAPANIS, A. On some relations between human engineering, operations research and systems engineering. In D. P. Eckman (Ed.), *Systems philosophy*. New York: Wiley, 1961.
- CHAPANIS, A., & HALSEY, R. A. Luminance of equally bright colors. *J. Opt. Soc. Amer.*, 1955, **45**, 1-6.
- CHURCHMAN, C. W., ACKOFF, R. L., & ARNOFF, E. L. *Introduction to operations research*. New York: Wiley, 1957.
- CONRAD, R. Speed and load stress in a sensori-motor skill. *Brit. J. industr. Med.*, 1951, **8**, 1-7.
- DEUTSCH, K. W. Some notes on research on the role of models in the natural and social sciences. *Synthese*, 1948-49, **7**, 506-533.
- HAIRE, M. Biological models and empirical histories of the growth of organizations. In M. Haire (Ed.), *Modern organization theory*. New York: Wiley, 1959. Ch. 10.
- HAMMOND, W. A. *Aristotle's psychology*. New York: Macmillan, 1902.
- HULL, C. L. Mind, mechanism, and adaptive behavior. *Psychol. Rev.*, 1937, **44**, 1-32.
- HULL, C. L., & BAERNSTEIN, H. D. A mechanical parallel to the conditioned reflex. *Science*, 1929, **70**, 14-15.
- HYMAN, R. Stimulus information as a determinant of reaction time. *J. exp. Psychol.*, 1953, **45**, 188-196.
- JACOBSON, H. On models of reproduction. *Amer. Scientist*, 1958, **46**, 255-284.
- KRUEGER, R. G., & HULL, C. L. An electro-chemical parallel to the conditioned reflex. *J. gen. Psychol.*, 1931, **5**, 262-269.
- LEVINE, M. A model of hypothesis behavior in discrimination learning set. *Psychol. Rev.*, 1959, **66**, 353-366.
- MACKWORTH, J. F., & MACKWORTH, N. H. The overlapping of signals for decisions. *Amer. J. Psychol.*, 1956, **69**, 26-47.
- MOSBAEK, E. J. Economic analysis of repair versus discard alternatives: Polaris fire control system components. *Technical Military Planning Operation Rep.*, 1959. No. RM 59TMP-40. (General Electric Company, Santa Barbara, California)
- MURPHY, G. *Similitude in engineering*. New York: Ronald, 1950.
- NADDOR, E. Simplified models in operations research. In C. D. Flagle, W. H. Huggins, & R. H. Roy (Eds.), *Operations research and systems engineering*. Baltimore: Johns Hopkins Press, 1960. Ch. 8.
- NEILSON, W. A., KNOTT, T. A., & CARHART, P. W. (Eds.) *Webster's new international dictionary of the English language*. (2nd ed., unabridged) Springfield, Mass.: Merriam, 1955.
- PETERS, G. A. Errors of estimate in operations analysis. *Operat. Res.*, 1957, **5**, 848-851.
- POULTON, E. C. Two-channel listening. *J. exp. Psychol.*, 1953, **46**, 91-96.
- POULTON, E. C. Listening to overlapping calls. *J. exp. Psychol.*, 1956, **52**, 334-339.
- RAND, B. *The classical psychologists*. New York: Houghton Mifflin, 1912.
- ROETHLISBERGER, F. J., & DICKSON, W. J. *Management and the worker*. Cambridge, Mass.: Harvard Univ. Press, 1939.
- ROSENBLUETH, A., & WIENER, N. The role of models in science. *Phil. Sci.*, 1945, **12**, 316-321.
- SIMON, C. W. Human factors research problems. *Hum. Factors Soc. Bull.*, 1959, **2**(12), 16-17.
- SPIETH, W., CURTIS, J. F., & WEBSTER, J. C. Responding to one of two simultaneous messages. *J. Acoust. Soc. Amer.*, 1954, **26**, 391-396.
- STEVENS, S. S. Mathematics, measurement, and psychophysics. In S. S. Stevens (Ed.), *Handbook of experimental psychology*. New York: Wiley, 1951. Ch. 1.
- UNDERWOOD, B. J. *Psychological research*. New York: Appleton-Century-Crofts, 1957.
- WEBSTER, J. C., & THOMPSON, P. O. Some audio considerations in air control towers. *J. Audio Engng. Soc.*, 1953, **1**, 171-175.

## THE MEANING OF THE ABEPP DIPLOMA

NOBLE H. KELLEY

*Southern Illinois University*

FILLMORE H. SANFORD

*University of Texas*

KENNETH E. CLARK

*University of Colorado*

THE reorganization of the American Psychological Association in 1945 with the accompanying restatement of its purposes embarked the new APA on a program of professional as well as scientific endeavor. Already, emerging social needs for the services of professional psychologists were great and problems of creating a responsible profession were urgently in need of solution. As an essential step in fulfilling its purpose to advance psychology as a profession, the Policy and Planning Board in December 1945 recommended that the APA establish a procedure for the certification of its members who were qualified to perform professional services.

### ABEPP: IN RETROSPECT AND NOW

As a first step in procedure, the Policy and Planning Board recommended to the Council of Representatives the adoption of an amendment to the Bylaws of the APA to establish an American Board of Examiners in Professional Psychology and further recommended that a Committee on the Board of Examiners be appointed to prepare further plans to present to Council in September 1946. Council approved this recommendation and the Board of Directors appointed this committee in April 1946. The proposed amendment to the Bylaws was approved by the APA membership in the summer of 1946 by a vote of 1,071 to 79.

#### *In Retrospect*

In September 1946, the committee recommended and Council approved the creation of an independently incorporated American Board of Examiners in Professional Psychology. This recommended change from a board within the organizational structure of the APA to an independently incorporated board emerged from two important considerations. First was to provide legal protection to the APA and its financial structure. Secondly, it was recognized that a separate corporate body com-

posed of competent and sincere persons with freedom and responsibility for independent action could best perform the task assigned. Whatever guidance or control is exerted by psychology as a whole must be effected through the wisdom and conscience of the members of the board. To establish an independently incorporated board involved repealing the amendment to the Bylaws, which was approved by the membership in 1947 by a vote of 1,663 to 30. Thus, by two general votes, the membership of the APA expressed itself overwhelmingly in favor of this professional undertaking.

ABEPP was incorporated on April 23, 1947, and nine members were elected to the Board of Trustees by the Council of Representatives. The newly elected board effected its formal organization and in July 1947 issued a general statement concerning certification and a first invitation to prospective candidates. By September 1947, 1,200 psychologists had requested certification forms.

The board considered that its first obligation was to the senior members in professional fields of psychology. The Bylaws of the newly incorporated ABEPP contained a "grandfather" provision which permitted waiver of the PhD requirement, its examination requirement, or both, if a candidate was judged qualified on the basis of training, professional work history, and satisfactory endorsement by colleagues. The determining date for "grandfather" status was the award of the baccalaureate degree on or before December 31, 1935. Final date for making application under this provision was December 31, 1949. 1,557 candidacies were received from senior members under the "grandfather" clause. Of these, 1,086 were certified with waiver of formal examinations and 30 were awarded the diploma by satisfactory performance on both written and oral examinations. About 85% of these Diplomates held the doctoral degree. The last detailed report on the "grandfathers" who failed to attain certification appeared in the 1954



Annual Report of the Board of Trustees in the November 1954 *American Psychologist*.

In 1947 when ABEPP was incorporated, the total membership of the APA was only 4,600. In 1949 when the "grandfather" provision terminated, there were only about 1,400 Fellows of the Association. It was somewhat of a revelation to the original Board of Trustees that over one thousand of these psychologists met the standards for certification. It was evident that all of American psychology did not belong to the "ivory tower." A real and significant increasing trend in professional activities had existed over the years.

After the board had completed its thorough individual review of all candidacies active under the "grandfather" provision, it decided to make a final *block* review of all cases in which it had *not* voted to award the diploma with the waiver of the PhD and/or the examination requirement. This final review was made in January 1952. Three of the original Trustees, who retired from the board in September 1951, but who had participated from the beginning in the assessment and evaluation of "grandfather" candidacies, were invited to assist in this final review. Thus, the board continued to the end a deep concern for its obligations to the pioneers in professional psychology.

#### *And Now*

The work of ABEPP then moved into a new period, which was already underway, where both written and oral examinations were mandatory for the award of the diploma. The first written examinations were held in the fall of 1949 and the first oral examinations were conducted in Chicago in November 1950. Each year written examinations have been scheduled, usually in November, and oral examinations have been held annually in the spring following an evaluation of the performance of candidates on the written examinations. Decisions on the award of the diploma have been made at the Annual Meeting of the board ordinarily scheduled just prior to the APA Annual Convention.

Application for the diploma is voluntary and applications are invited from interested psychologists who meet the following requirements:

1. Membership in the American Psychological Association and/or Canadian Psychological Association

2. A PhD degree in psychology from a college or university which, at the time the degree was awarded, met the existing standards of the American Psychological Association for doctoral training in the specialty of the applicant or the equivalent as judged by the board

3. Five years of acceptable qualifying professional experience during which time the candidate shall have demonstrated superior performance. Four years of this experience shall be postdoctoral.

4. Presently engaged in professional work in the field of specialization

Taking account of the many changes in professional psychology prior to, during, and following World War II, the board, during the first few years, did not deem it wise or fair to establish rigid policies with respect to training or the requirement of postdoctoral experience. As these situations changed, however, and as training programs became somewhat more systematic, the board adopted a graduated policy regarding postdoctoral experience. This policy provided a graduated increase from no postdoctoral experience to 2 years in 1951, to 3 years in 1953, and to 4 years of postdoctoral experience in 1955.

From the beginning, ABEPP has continued to award diplomas in three specialties: clinical psychology, counseling psychology, and industrial psychology. Early awards to psychologists in the specialty of counseling psychology were designated as "Counseling and Guidance." When the Division of Counseling and Guidance changed its name to the Division of Counseling Psychology, the board in 1955 changed the specialty title to "Counseling Psychology." In its procedures for identifying and evaluating psychologists at an advanced professional level, the board has held to the point of view that the traditions of psychology are the traditions of science. These traditions include disinterested scholarship, faithful reporting of observations, cautiousness in making interpretations from data, and a tolerance for alternative viewpoints. Further, the board has maintained the conviction that the psychological approach to all problems, including those encountered by the professional psychologist, is essentially investigative rather than dogmatic and that familiarity with and ability to understand and evaluate research are essential for personal professional development and for a high quality professional service to clients and patients. Other major aspects of the evaluation procedures are concerned with appraising the candidate's readiness and competence to undertake full responsibility for the welfare of the clients and patients he serves in his area of specialization.

As was true in the "grandfather" period, the board still evaluates the credentials of each applicant on each of the following criteria:

1. Adequacy and extent of basic training
2. Amount, breadth, and quality of professional experience
3. Evidence of special competence
4. Professional standing as a representative of psychology in the community

The credentials assembled, including letters of endorsement, must satisfy the board that the applicant meets appropriate professional standards for admission to candidacy and to further evaluation by examinations.

The first written examinations covered a period of 2 days; they have always included both objective and essay sections. Early examinations included a section on the basic fields of psychology. This was removed in 1953, mainly because the accreditation program of the APA had resulted in more uniform and systematic training for the PhD degree. In its place was included an objective examination covering psychological knowledge and principles basic to each of the three separate specialties. In 1955, the examination time was reduced from 2 days to 1. A candidate who fails this examination or any portion of it has the privilege of re-examination.

Each year the board reviews its written examination procedures and modifies the content of the examinations. Candidates taking the examinations and Diplomates administering them are invited to evaluate both the content and procedures. Periodically, selected Diplomates are invited to submit items and questions. A similar invitation is extended each year to the participating candidates. By this means, the board accumulates a reservoir of items from which selections can be made for future examinations.

The board has sought the opinions of its Diplomates on the appropriate categories or areas that should be included in the objective examination for each of the three specialties and the percentage of items that should be placed in each category. Responses to the essay portions of the written examination are evaluated independently by four Diplomates in the appropriate specialties. Ratings are assigned to assess the quality of the candidate's performance. Thus, the board continuously has benefited from the participation, assistance, and collective judgment of the profession in preparing a written examination that is appropriate for professional psychologists.

The oral examination presently includes the following three parts:

- A. Diagnosis, appraisal, or evaluation (the definition of the problem faced by the professional psychologist)

- B. Therapy, counseling, or constructive action (how to deal with the professional problem)

- C. Organization and administrative problems of professional psychology (What are the conditions of acceptable and ethical professional practice?)

The first two parts deal with the major areas of professional practice. The third part deals with the psychologist's responsibility in client and professional relationships and his identification with professional psychology.

Each candidate is now examined by at least two separate committees. Each committee includes two Diplomates in the candidate's specialty, with a different member of the board (current or recent) serving as chairman of each committee. The oral examination involves a professional field situation in which the skills of the candidate in diagnosis, appraisal, or evaluation are directly observed by a Diplomate examiner. Prior to oral examination, a candidate is required to submit a recent sample of his professional work in therapy, counseling, or the making of recommendations to clients so that his examining committee can study his day-to-day work in these professional areas. At the end of each part of the oral examination, each member of the committee, including the chairman, makes an independent decision as to whether the candidate, in his judgment, meets the minimum standards for Diplomate status. Each examiner records comments supporting his decision. If the board member notes inconsistencies in the three judgments recorded, he calls for an immediate group discussion in which opinions, evaluations, and standards applied by each examiner are shared. An examiner, following this conference, may or may not change his decision.

In spite of or because of the number of examiners who participate in the evaluation of each candidate, the board is aware that every examination may not meet its expectations for fairness or appropriateness in procedure or validity of judgments made. Against these possibilities the board attempts to protect the interests of the candidate in two ways: first, the final decision on the candidate is made by the board itself in physical meeting; second, each candidate is given the privilege of re-examination with a different committee of examiners.

As of May 31, 1960, 812 candidates had made application under the provision of mandatory examination. 125 of these have been received since July 31, 1959, the date of the last Annual Report. This is the largest number of new applications re-

ceived in a given year since candidacy under the provision of mandatory examination was first activated in 1949. 348 candidates have been awarded the diploma by successful performance on examinations, 359 candidacies are in process, and 105 have been terminated. Of these 105, only 53 were terminated for failure twice on written or oral examinations. 52 were terminated under conditions where candidacy did not proceed to full examination privilege. Detailed information on the status of all candidacies appears in the Annual Reports of the board published in the *American Psychologist*. Of the 359 candidates in the process of evaluation, 134 appeared for oral examination in the spring of 1960.

The Board of Trustees of the corporation presently consists of 10 members who are elected by the board from a list of nominees approved by the Council of Representatives of the APA. Each of the three specialties is represented in the membership. There are five trustees from the specialty of clinical psychology, two from counseling psychology, and two from industrial psychology. These nine trustees are Diplomates. In addition, one trustee does not hold the diploma but is elected to serve as a representative of psychology in general. The non-Diplomate trustee is carefully selected to provide leadership by serving as President of the board. Term of office is for 4 years and no member, with the exception of the Secretary-Treasurer, may be elected for a succeeding term.

The board has had continuing concern for the meaning and value of its diploma not only to those who are willing to undertake its attainment but also to their colleagues in the APA. During the past year, ABEPP, by means of a questionnaire, sought the opinions of its Diplomates who have earned the award by successful performance on examination. The third part of this article presents the views of our responding Diplomates; the second part presents the definition of a Diplomate as seen by the oral examiners.

More detailed information on current operations of the board may be obtained by writing the Executive Office (Carbondale, Illinois) for a copy of ABEPP's *Policies and Procedures*.

#### THE DEFINITION OF AN ABEPP DIPLOMATE AS SEEN BY THE EXAMINERS

Since 1950, approximately 810 ABEPP oral examiners have made pass or fail judgments about the professional competence of about as many applicants for the ABEPP diploma. This process—

involving approximately 7,000 man-hours, many very uncomfortable, on the part of examiners and 3,000 man-hours, sometimes even more uncomfortable, on the part of candidates—had produced as of January 1, 1960 about three decisions by the board to award the diploma for every two decisions—all very stressful—to deny it.

ABEPP examiners are making judgments about the professional competence of their colleagues, most generally their younger colleagues. And while they have sufficient confidence in their standards to do their assigned jobs, their confidence is by no means absolute. They continually try to check their operating standards against the reality that our science and our profession are truly and rapidly evolving.

Not only do the Trustees wish to check their standards against a changing reality, they want to communicate them for what they are worth *now*—to psychologists who are aspiring to the ABEPP diploma and to other psychologists who are training aspiring psychologists. With these considerations in mind, the Board of Trustees of ABEPP has attempted to communicate some information about this prevailing definition of what is a good professional psychologist, by putting together an article around some raw data which they thought could, without breaching either security or propriety, be released, and which they thought might serve as useful feedback from the board to the profession.

Each oral examiner, in each examination, records his evaluation of the candidate, and adds comments about the critical aspects of the candidate's performance. Anne Roe, Stanley Estes, Reign Bittner, and Edward Bordin, all members at the time of the ABEPP Board of Trustees, pored over these records from numerous past oral examinations, collecting and classifying all the comments made by all examiners in support of their evaluations. Data thus include comments about candidates who passed and candidates who failed.

This work led to a rich array of psychologists' judgments. As it turned out, it was mostly a negatively flavored richness since examiners consistently fail to justify highly positive evaluations. When the examiners see a performance of very high quality, their enjoyment of it seems to obliterate the necessity to write about it. It is also true, of course, that comments are recorded primarily about those aspects of performance which would suggest whether the candidates should pass or not; when no doubts existed, fewer comments would be written. By such

an accent on the negative, perhaps we will be moving only toward a definition of what a good psychologist is not, but a look at these judgments may nonetheless tell something about professional standards in psychology.

No sampling of comments can do justice to the total list of remarks compiled, but perhaps the variety and nature of judgments can at least be illustrated. The following list was obtained by selecting every fifteenth comment from the entire list of items.<sup>1</sup>

#### *Field Situation and Examination on Diagnosis*

He displays a degree of confidence which at times borders on exasperating smugness if not condescension. These attitudes at times become manifest also in his work with his patients.

He seemed immature and egocentric.

His approach to the client was literal, rigid, mechanical, and unimaginative.

Covered his uneasiness by flippancy.

No clear focus as to what she wished to learn from the patient.

Interview not well directed, many significant areas unapproached.

Has not fully thought through the entire problem of client relationships and subject support in the application of the technique in the work sample.

In a few instances failed to follow skillfully on significant leads during interview.

Question his judgment in using entire two hours for personality evaluation without minimal evaluation of formal thought processes.

He learned practically nothing about the patient, except a mass of unordered test data and a few items of personal history, such as date of birth.

A few misunderstandings of testing principles and findings.

Knowledge of appropriate instruments not adequate.

Candidate jumped to unwarranted conclusions about diagnosis and personality structure.

Rather incompetent in interpreting his data and in making a diagnostic evaluation.

Failed to define adequately the problem and to search out the more essential aspects of what might be wanted in the diagnostic situation.

Was a little "glib" in a couple of points in the examination and had to back up a little.

<sup>1</sup> The original manuscript from which the list was drawn may be obtained by writing to: Noble H. Kelley, Secretary and Treasurer of ABEPP; Southern Illinois University; Carbondale, Illinois. Items are grouped according to the areas in which candidates were examined; most comments relate to the clinical specialty, but counseling and industrial areas are also represented.

Report really does not tell the client what the results appear to show.

#### *Therapy Examination*

One hundred hours with a psychotic patient, approached as "interesting" with few questions raised as to what is best for the patient, can be considered as rigid and lacking in sensitivity.

Weak on awareness of emotional factors and not skillful in dealing with them.

My feeling is that the candidate needs a good deal of training before he will be able to do therapy satisfactorily.

Not the best in therapy because limited in treatment of emotional or affect factors.

Industrial information limited.

Well qualified in the narrow field of test development, but is not qualified as a broadly equipped technician in the field of industrial psychology.

Case history was poorly organized and from the point of content was inadequate.

He was not able to formulate a theoretical frame of reference for his treatment program.

Candidate aware of probable nature of problems but indefinite in suggesting solutions.

Maybe he makes too much out of results on small numbers of cases—but he is not naive.

Takes all facts at face value.

#### *Research Examination<sup>2</sup>*

Candidate seemed not too well acquainted with design criteria, went off at tangent when specific design characteristic was approached.

No imagination re use of reference books on population statistics to check representativeness of obtained sample.

By own admission, he does not know statistics and could not handle detailed questions on the articles.

He showed knowledge of the five research articles assigned, but was unable clearly to assess the problems, procedures, and results.

I was not sure the candidate thoroughly understood the several studies discussed with him . . . his focus in the studies discussed did not seem to be sharp.

His criticisms of research were occasionally adequate, but not incisive, and did not seem to show extensive knowledge of the field.

Not too strong in theory.

Took critical points on research design and methodology rather lightly.

Describing his own research, he showed a similar lack of appreciation of problems involved. Poor conceptualization, formulation, and organization of the project.

<sup>2</sup> Examination on research is now included in the written examination.



I think the candidate is much better informed than one would judge on the basis of his answers. He seems quite circumlocutious and often failed to get back to the heart of a question—even when it was more of an opinion than an information question.

I give him the benefit of the doubt simply because I don't have the goods on him enough to fail him with confidence. He rambled on and on, tangentially and vaguely. I feel, however, that we did not seem to be able to interrupt him and keep him on track enough to formulate a surer judgment. I honestly don't know how much he knows about research.

### *Ethics and Professional Relations*

She sees ethical problems mostly in terms of protecting the client at all costs and regardless of other considerations. Cannot be pressed to give more than clichés.

He discussed ethical issues in a superficial way and showed very little thoughtfulness or sensitivity to the kinds of conflicting responsibilities usually encountered in clinical experience.

A little slow to answer the hypothetical question on ethics and a little slow to work through to the desired action in the real life situation.

Difficult to judge because he talked so much.

He has not thought through the ethical problems involved in selling a semiclinical type of service without validation data.

He is conscious also of referral needs, but not too good on the consultation concept.

His professional participation is apparently not high.

He was a bit vague and evasive. It was awfully hard to get him to state dilemmas of conflicting values, save in the professional aspects of things. He certainly is not a hairsplitter with his conscience . . . I would not want to send a patient to him, not because I think he's unethical but because he's too unperceptive to see the issues and could do damage.

A prolonged study of the entire array of negative comments from which our sample was drawn could lead easily to the conclusion that it is *utterly impossible to be a good professional psychologist*. The fact remains, however, that 378 psychologists have been judged to meet the criteria with enough success to be awarded the ABEPP diploma. This fact, viewed in contiguity with the criteria suggested in the preceding sample of comments, may be taken to mean that the criteria apply only to the *ideal professional psychologist*—who may or may not exist. Perhaps we cannot hope that one psychologist can be a mature, integral human being, sensitive and deeply aware, highly skilled in the use of his professional tools, broadly educated—and still educable—in human affairs, artistically competent in professional practice while maintaining a scien-

tific orientation both to the evolving knowledge in his field and to the assessment of his own performance, clearly demonstrating a keen awareness of the ethical issues involved in an intricate and unstructured professional role, and withal, joining with his fellows in scientific and professional organizations to confront general problems of common concern.

Yet we must establish this kind of image when we consider simultaneously the nature of the problems professional psychologists deal with, the state of our knowledge of human behavior, our historical allegiance to scientific and academic traditions, the youth of the psychological profession, and the fact that the control and guidance of professional practice must come from within the practitioner rather than from established and sensible social mechanisms that can protect the client from the incompetent, insensitive, and unethical person.

These factors prevent ABEPP from giving its diploma to any of a variety of *partial* psychologists. We cannot approve of the skilled technician plying a frozen set of skills. We cannot approve of the intuitive healer who scorns questions of logic, evidence, and demonstrability. We cannot approve the callow, inexperienced, and sometimes self-appointed practitioner who rushes into human affairs that may be beyond his depth and his ken. We cannot approve the scientist, however great his research creativity, who rushes into professional practice without the skills, the artistry, and the judgment required for handling concrete problems of behavior. We cannot approve the immature and the unaware, whatever the degree of intellectual brilliance. And we cannot approve the dullard, however proper his training and however extensive his alleged experience.

How seriously do the ABEPP examiners take the image of the ideal psychologist, the image that seems to underlie our array of comments? This is a very practical matter for anyone planning to take the examination or for any training institution which hopes its graduates will achieve ABEPP diplomas. While perhaps no candidate ever sailed through these examinations without disappointing some examiner on some occasion, and while many of the present negative comments were directed at successful candidates, the standards we infer here nonetheless do operate. No psychologist is awarded the diploma who is below a certain minimum on any of the operative criteria. It would be difficult to define or describe the precise minimum. But it is sufficiently high to give us the assurance that any

psychologist who earns his ABEPP diploma through these examinations is, at least on the day of the examination, a human being of exceptional quality and a professional person of unquestionable competence.

In summary, then, we may draw certain inferences about the operating standards upon which the ABEPP diploma is awarded. First, there are qualifying requirements of training, experience, and endorsement. The ABEPP Diplomate must have received a PhD degree or its equivalent from a recognized institution giving graduate education in psychology. He must have accumulated qualifying experience, including experience under supervision. And his endorsers, preferably ABEPP Diplomates, must recommend him as a decent human being who demonstrates sound professional behavior in his chosen setting. On the written examination he must demonstrate knowledge of the language and content of the psychological culture and must show that he can write with reasonable literacy and intelligence on scientific and professional problems.

*In the field and oral examinations on diagnosis,* the candidate must demonstrate:

1. A sufficient freedom from personal deficits and urgencies to enable him to engage in a suitable relationship with the client
2. A properly developed skill at interviewing
3. Skill, knowledge, and judgment in using technical diagnostic tools
4. The ability to accumulate systematically the relevant diagnostic data and to organize, conceptualize, and express a meaningful interpretation of those data

*With respect to treatment,* the candidate must impress the examiners that he has:

1. The maturity, stability, integrity, and sensitivity to enable him to engage in an intricate and constructive relationship with a patient or client
2. A genuine and rounded competence, born of genuine and rounded experience, for the professional work he is doing
3. A possession and mastery of the professional skills involved in his work
4. The ability to formulate and articulate a meaningful plan for his work with the client or patient
5. A critical minded stance with respect to his own work
6. The ability to conceptualize in a meaningful way what he is doing and what he hopes to accomplish

*In the examination on research,* the candidate must demonstrate:

1. Enough basic knowledge of statistics and research design to enable him to read critically the research literature relevant to his line of work

2. Enough background and intelligence to enable him to understand, evaluate, and interpret the relevance of research literature

*In the examination on ethics and professional relationships,* the candidate must show:

1. An awareness of ethical issues involved in the practice of psychology
2. Mature attitudes with respect to relations with his colleagues in psychology and in other professions
3. An informed concern for the problems facing his profession as a whole
4. An interest in participating with his colleagues in the activities of psychological organizations

Here, then, is what we may regard with some certainty as the prevailing definition of a good professional psychologist. It will seem to many and perhaps to most psychologists a very sound definition, representing a creative amalgam of the best of the traditions of science and the traditions of professional service, and constituting a functionally significant image of which no psychologist, past or present, need be ashamed and in which many can and will take pride.

#### THE VIEWS OF RECENT DIPLOMATES OF ABEPP

A summary of the judgments of ABEPP examiners gives only a part of the picture of applying, taking written examinations, working in a diagnostic field situation, and taking oral examinations which ultimately leads to the award of the diploma or, alas, to the need to try again. Examiners are wise and sensitive critics, but they are critics, and the preceding report of their comments is enough to make the most confident candidate uneasy.

Let us look, instead, at the comments of those semiwilling candidates who subjected themselves to this critical scrutiny, and who were thereafter awarded diplomas.

Recent Diplomates of ABEPP all have been required to complete the process of application and examination described in earlier parts of this report. To the most recent 315 awardees, a questionnaire was sent in the fall of 1959 asking them to comment on effects of their having been boarded, to appraise the examination process, and to suggest ways in which operations could be improved. With no follow-up appeal, 269 questionnaires (85%) were returned by February 20, 1960. This response in itself attests to the strong identification with ABEPP that results from the award of the diploma.

We first asked our Diplomates if being boarded

had provided advancement or other financial gains. Direct and immediate benefits of material gains of this sort were cited by 27%; others indicated some expectation of financial gain, or thought it likely that benefits they had received derived in part from their Diplomate status. Most respondents indicated that no direct or indirect material benefits came to them as a result of being boarded; many indicated that they had not expected any such benefits. Even the list of comments presented below suggests that ABEPP status is, at best, only slowly coming to have direct and immediate effects on salaries and professional rank.

Illustrations of the responses made by persons who had experienced material benefits are presented below:

#### *Direct Benefits:*

Was offered a fairly lucrative position with a psychiatrist in private practice. His eagerness—in part—was attributed to the status of ABEPP. Also my position in this VA hospital was certainly enhanced, especially among other services.

Eligibility for position of Director of Psychological Center which I now occupy.

Five percent raise plus all expenses for ABEPP exams.

Appointment to the position of Chief Psychologist was in part dependent on ABEPP; we have however not succeeded—yet—in convincing Civil Service to recognize ABEPP in the same financial fashion Specialty Boards in Medicine are.

None, except on one occasion when it was possible to obtain a consulting position with the state where the *minimal* requirement was an ABEPP diploma.

Higher pay scale for my part-time teaching—little difficulty in getting another job and part-time teaching—other offers of jobs (all once I moved away from where I was when I took the exams).

Consultancies in several installations, providing (a) source of referral for private patients; (b) local prestige; (c) opportunity for me to share and learn.

Promotion to a top grade, with accompanying raise in salary; this grade specifically required possession of the ABEPP diploma.

#### *Indirect Benefits:*

I am an associate professor of psychology in a large university. No financial reward has come directly from diplomate status. It does give our training program more public merit, and that satisfies me. It *may* be taken into account as *one* criterion for merit salary increase and promotions, i.e., I believe it will have some small effect among other factors.

No financial factors that I could pinpoint, though there is always the chance that these are influenced to some ex-

tent by the Diploma. Regarding "advancement" it is possible that the level of competence implied by the Diploma may have been one of the several factors that led to my having been considered favorably for my position in this department.

None has come as a direct result, so far as I know. I presume it *helped* me get a professorship and a VA consultant-ship.

No specific increments in income as a result. The Boards may have resulted in some additional referrals.

Possibly would not have been granted a promotion in faculty rank without the Diploma.

I have been contacted by at least two individuals offering me a position (ABEPP preferred).

Indefinite—if any, probably served to support small annual salary increments.

I don't know whether it's been the result, directly, of my obtaining the Diploma, but I have been promoted to Senior Psychologist, with a sizable pay increase.

None as yet. I did receive an unsolicited letter of commendation from the manager of the hospital where I am employed when the then current list of diplomates was called to his attention by routine dissemination.

Does being boarded have a favorable effect on professional status and prestige? Most Diplomates (69%) say yes. The way in which such affirmative responses are given is illustrated by the following sample responses:

Not being a "grandfather" appears to have status value.

It probably is a factor in my being considered as one of the more senior Clinical Psychologists in the area. It probably was important in my being appointed to the state association's Certification Board.

It's hard to assess, but I believe it has lent additional status or prestige.

Hard to say—certainly some positive effect on medical colleagues. Trouble is, if there *is* an influence, it's a silent or indirect one; the few people who make an overt display of being impressed are persons no one cares to impress anyway.

Considerable, I would say. One doesn't hear many negative comments so I can only report the positive things I hear. I am accorded considerable status as an "expert" by our staff. Possession of the diploma is certainly a factor.

Favorable effect on colleagues in psychology. I don't think colleagues in related disciplines have been influenced.

The Diplomate has very definitely been a status and prestige factor among colleagues. Psychologists realize what is involved but psychiatrists have a distorted notion, seeing it as exactly comparable to their Boards which are taken almost automatically—and of the same difficulty.

In this area, perhaps, there has been a noticeable increase in regard by colleagues. Some of my medical colleagues

appear to have a higher status perception of the diploma than psychologists.

It has had a very definite favorable effect, in my estimation. Considerable, since I am the first (?) and only Diplomate at my University.

I think favorable to a significant degree.

I feel that it has added to it slightly, since I have published very little and have little prestige via this route.

Very slight increase.

I don't know; probably some but nothing very striking.

This could only properly be evaluated by your asking among my colleagues. It is my impression that it has had some *minor* effect in raising prestige among a few psychologists and it has been of some interest to some physicians who seem to regard it as comparable to specialty boards in fields of their own profession. With none, however, does it seem to be regarded as a symbol warranting any significant alteration in prestige.

A little increase possibly.

Some, but how much or how little I cannot say.

This is intangible and subjective. There may be a bit of admiration and awe—but hard to evaluate.

We would expect some psychologists to express a more jaundiced view than this, and about one respondent in four has obliged. Most are reservations about the impact of being boarded; some are quite articulate in expressing the feeling that there are better bases than this for establishing status.

Very rare, but important to record, were such comments as the following:

*Absolutely NONE!!* It merely aroused the enmity of my colleagues who apparently have no attention [sic] of applying. It was not even acknowledged by the local psychological association, although it was the first one in the history of this group.

A preponderance (90%) of favorable responses was received to the third question, which was: "How do you feel now about having invested your time and money in going through the examination procedure?" Most Diplomates obtained a real personal satisfaction in the award of the diploma. They felt it was well worth the effort both from a personal standpoint, and as an important part of the development of the profession. A cross-section of responses given is presented here:

Rather than put it negatively by saying, "I've never regretted it," I would prefer to say that I have always been extremely gratified with my decision to take the exams.

Extremely valuable.

Very glad I did it.

Pleased.

It was worth the time, effort, and money, and I would do it again. The satisfaction of having successfully negotiated an added level of competence—attaining membership with the elite, so to speak—has repaid the investment.

I do have some degree of satisfaction.

Would do it again; makes me feel a little more secure to be approved of by authority figures, and to know I've passed the highest level of competence; feel the "idea" of board exams is a good one.

Wasted.

As a necessary requisite to becoming a professional psychologist, the exams had to be completed—but I have no strong affection for the procedure.

Well worth both time and money.

Glad that I did.

ABEPP has always expected that diplomas would be displayed. Are they? Seventy percent report they do, and almost 30% report that they do not display the diploma in a public place. Most of the latter indicate some reason why this is not appropriate, or indicate that the diploma hangs at home (home is considered a public place in this analysis only if there is indication that private practice occurs in the home).

An outpouring of comments, recommendations, criticisms, and commendations came in response to our questions about the way in which examinations were conducted. The Board of Trustees of ABEPP intends to devote a substantial amount of time to a review of these comments. Examining is an area of effort in which psychologists, if any group can, should be able to do an outstanding job. We should be able not only to conduct a useful social experiment with ABEPP's efforts to give professional status to selected psychologists, but also to provide a degree of technical sophistication in examining procedures which no other profession can do. We must also expect, of course, to have a more critical review of our procedures by the candidate group than other boards would encounter.

A detailed summary of comments by Diplomates about the examination procedures is not included in this report. Many of these relate to special circumstances in oral examinations; most are constructive and will be used in planning subsequent examinations. A few responses relate to problems of administration, or to practices in examination which no longer exist. The most serious objections to the examination procedures, even though made only by a modest number of respondents, concern the use of oral examiners who appear to the candidate to



be biased, rigid, or less competent than he is; the diagnostic field situations are criticized for being somewhat tangential to the interests and capabilities of the candidate; the written examinations are considered to contain too much trivial or irrelevant or geographically distorted content. Yet most Diplomates feel that preparing for the examinations was worth the effort, that the entire process was reasonable and orderly, and that standards for passing are at about the right level. The Board of Trustees of ABEPP will use all suggestions in establishing future practices, and will use the responses to prepare a guide to prospective candidates, so that new candidates may capitalize on the recommendations of their predecessors for most appropriate procedures to use in preparing for the examinations.

It is clear from the reports we have from our recent Diplomates that the diploma is valued. Yet there are reservations. Perhaps most serious is that the ABEPP process "has not caught hold." This is the point made by those persons who count the number of "grandfathers" and the number of persons who have been boarded by examination. The record suggests that there are substantial numbers of qualified persons (especially in industrial and counseling psychology) who have not applied for the diploma. One reason for this is frequently cited by our Diplomates: that there are no "built-in" rewards, such as automatic salary increases, to being boarded in psychology, although there are such benefits associated with medical boards. Another factor is cost; as the number of candidates increases each year, some reductions may result, either in terms of greater amortization of the costs of preparing examinations and handling records, or in the lessened costs of travel associated with the exams. Yet the cost will never be appreciably lower than it now is, unless major revisions in the examination process are made.

Another important factor mentioned by many persons relates to the standards which ABEPP should set. This matter is related to the issue in the preceding paragraph. Even if all candidates had been passed during the past 10 years, the total number of Diplomates would not be increased substantially, since those who fail represent only a small proportion of the total number of persons presumed eligible for this status. Many of the persons in the relevant area of interest in psychology

indicate that they consider that the diploma is not appropriate for them in terms of the work they are currently doing. Thus, presumably, they are not interested in doing the work which preparation for the examinations requires, or else are unwilling to pay the fees. Perhaps this group would be more interested if the diploma were easier to obtain.

If we lower standards however, ABEPP status changes: the use of the diploma to identify the fully qualified independent practitioner is lost. And it is clear from the comments in the preceding section that examiners would feel very strongly about any such lowering of requirements. More Diplomates who are replying to our questionnaire ask for an increase in standards than ask for reduction of standards.

Does our evidence suggest that the procedures of ABEPP and its total program may be considered successful? If we define success as indicated by the number of persons who consider the diploma essential, the answer is a qualified no. If we judge by the attitudes toward ABEPP of persons who have received the ABEPP diploma, the answer is a fairly strong yes. These Diplomates by and large are pleased to have received the diploma, are in the main content that the procedures used in examination are appropriate, and feel that the time and money they invested were well spent. How could we increase their feelings of satisfaction with the diploma: by having it produce more tangible and more immediate rewards for the recipient, and by having the diploma sought for by a substantially larger number of persons. The former goal requires the work of all psychologists, and perhaps especially of such persons as those in the APA Central Office, on the Board of Professional Affairs, or in related professional activities in state societies. The latter can be attained by the Diplomates themselves, whom we now advise to say to their well qualified colleagues: "Go thou and do likewise." It also requires, however, the achievement of ABEPP status to be perceived as an expected part of the work of professional psychologists in industry, government, hospitals, universities, and in private practice. And it might be a goal more readily achieved if graduate departments of psychology accepted some degree of responsibility for encouraging their PhDs to include "getting boarded" as a necessary and important step in their professional development.

## Comment

### Can Psychology Be Made Wholly Objective?

A small but growing group (31 to date) of American psychologists is currently interested in constructing, from the ground up, a complete psychology based exclusively on actually observed behavior. We feel that those who believe psychology can and should be made wholly objective should not just preach, but demonstrate by example.

We appreciate the isolated and sporadic work which has already been done from this point of view since the days of John B. Watson; but we are planning a complete, multivolume, *integrated* psychology with possibly 50 contributors. It will be organized on the basis of observed independent and dependent variables, and will incorporate and integrate within this framework the mass of published experimental data. It will have plenty of theories, but no hypothetical constructs—all its theories being generalizations from one or more *observed instances*. It will be edited by a small board, not an editor-in-chief, and will not be dominated by, nor identified with, any one man or theoretical "school."

Not all those interested in this project are convinced that abstractions from observed instances are the *only* theories that are useful; but we all want to see a psychology based solely on such theories *tried out*. We are curious to see how much territory can be covered, how many data bound together, by such theories alone. We want to see whether completely replacing postulational explanations by purely empirical ones will help or harm psychology. We see our project as novel, intriguing, and very promising—but still an experiment.

Psychologists who sympathize with our objective and would like to participate in the project are invited to correspond with the undersigned. Since the grand opus will probably take 5 years to complete, contributors will not need to begin work on their contributions immediately. Our major task during the coming year will consist of planning the broad outlines of the opus, and deciding on procedures for editing and integrating the contributed papers.

WALTER S. TURNER  
*University of California*

### Business and Politics

From the point of view of a student of political science, Bauer's article (*Amer. Psychologist*, 1960, 15, 650-655) ends on any but "a happy note." While business organizations undoubtedly share features with social and political systems in general, the differences

are significant. Bauer has not given any attention to the differences in goals of business and political systems, and the consequent implications for organization. There is no reason to assume that the chief aim of a political society is "productivity" and/or "stability." The struggle for an "open society" is already half lost when the assumption is made that a political society is nothing more than a rather large and complex business corporation. Technocracy has always had its adherents, particularly in times when general disorder in political life could be compared unfavorably with great productivity or stability in business enterprises. The use of a "cybernetics model" for society, even though it would take into account many variables, including "feedback," suggests that social knowledge and policies can and must be derived through the same methods used in business organizations.

I cannot see the greatest danger of our time coming from any attempt to "freeze" society, or the instability which might result from a system which is too rigid. What is far more threatening is the tendency to agree with Marx: that society is nothing more than a superstructure deriving all of its characteristics, knowledge, and values from the prevailing relations of production. If we believe this state of affairs to be inevitable, then there is nothing better to do than work up the cybernetics model and make the most of it. However, if we believe that it is possible for a society, as well as its members, to have goals not derived from its system of production, and that it is possible for such goals to take precedence over the values of business, including productivity, then we are not compelled to accept organizational studies as our picture of reality. We would be far happier in emphasizing the *differences* between business organizations and political societies.

JOAN FISS  
*New York University*

### Current Hypnosis

Michael Amrine's remark concerning hypnosis and hypnotic age-regression (*Amer. Psychologist*, 1960, 15, 563) demands comment. Hypnotic age-regression is very much the concern of many psychologists, even some of us who have "become sophisticated" and live "in the present and the future."

Almost since the discovery of hypnotic age-regression by Krafft-Ebing in 1888, popular writers have tried to equate the phenomenon with a time machine. While such an equation sells copy, it distorts reality. Those of us investigating the phenomenon experimentally are

not interested in transcending time and space. We are concerned with the possibility of the reinstatement of previously acquired responses or response patterns which have been forgotten or extinguished. If the trend of more recent experimental and clinical evidence continues, and it is demonstrated that responses individuals made when children can be reactivated through hypnotic age-regression, many fields will be served.

The possibility of using hypnotic age-regression in the treatment of individuals with various forms of psychological disorder is obvious. Perhaps even more important would be the credence such a phenomenon could lend to the idea that when a response is made, there is a concomitant, partially irreversible reaction within the organism—i.e., our every action and thought are never totally forgotten. Such information would be of interest and use to both the learning theorist and the physiologist. Thus, the actuality of such a phenomenon could open broader vistas in our constant search to understand that which we are. It is unfortunate that there are those among us who are unable or unwilling to look into the past in order to view the future.

Turning now to Amrine's inferred suggestion that psychologists leave sleeping dogs lie (Charcot was one he named), I am sure that psychologists will not begin a mass exodus from the portals of hypnosis. Hypnosis, as a treatment method and a subject of research, has gained considerable recognition in the past 10 years. Professional organizations include many psychologists in their memberships. In fact, the American Society for Clinical Hypnosis has a psychologist—Frank A. Pattie—as its President. Psychologists most certainly are interested in hypnosis and its varied phenomena.

It seems to me that the psychologist must continue to be involved in areas where others are wont to tip-toe out the door for fear of arousing some unknown, slumbering Cyclops. If hypnosis and hypnotic age-regression be such monsters, then let us ride our ewes into the cave of darkness in order to see the light.

WILLIAM E. EDMONSTON, JR.  
Washington University School of  
Medicine

### Testing by Masters

"NAME WITHHELD's" letter and Cronbach's criticisms of management consultant firms in the October *American Psychologist* (pp. 665-666) are indeed of interest and a service in this test-happy age. I wonder, however, if Cronbach intended the implication that MA psychologists are unqualified to administer and interpret projective tests. It strikes me as an unwarranted generalization. It is certainly comforting to live by generalizations: one can always be found to support our biases. However, it could just as easily be said, using

the same sort of reasoning in the other direction, that because Karen Machover, Florence Miale, and Roy Schafer gained recognition in the field of projective testing while they held the MA degree, all MA psychologists are as competent as they.

While we can sympathize with Cronbach's irritation—about the industrial applicant's unenviable position—let us place the responsibility for this problem where it belongs.

ALMA L. NICHOLAS  
Institute of Living  
Hartford, Connecticut

### Culture and Biology

Being against fallacy is like being against sin. It is sanctimony unless accompanied by an analysis of how falsehood hypocritically simulates truth and how sin brazenly parades as virtue. When an analysis is offered to support the charge of fallacy, then it is the analysis which must be examined for its validity. The vehemence with which the fallacy is charged is pointless by itself except as a red herring which may draw attention away from the issues under analysis.

The cry of fallacy was raised by Jesse H. Harvey's comment (*Amer. Psychologist*, 1960, 15, 667). He charges the error of creating a dichotomy between the culture and the biology of the individual. The occasion for his outcry happens to have been my comment, "Monkey Tricks and Voodoo Psychology" (*Amer. Psychologist*, 1960, 15, 219-220).

The only evidence which Harvey quotes to connect my comment with a fallacy which I abhor just as much as he does is my statement, "The social definition dominates and transforms biological reflexes." The discord between the evidence and the charge seems flagrant to me. Unfortunately for Harvey's claim, his use of quotation marks hardly operates magically like the looking glass of *Alice in Wonderland* through which plain meanings become changed. Apparently his inference of the fallacy of dichotomizing culture and biology was drawn from the dominating position I assigned to social definitions over biological reflexes. For, later on in Harvey's comment, the same words (except for the apparently crucial deletion of the verb "dominates") are introduced as a truism. His comment says: "True, social definitions do transform biological reflexes and drives, but the reverse is also true . . ." It was Lewis Carroll who pointed out long ago that the reversal of a statement frequently paves the way for fallacy. To use his amusing example, to see what I eat does not necessarily imply that I eat what I see. Even the Queen of Hearts might have some difficulty explaining how, without exception, social definitions transform biological reflexes while reflexes transform

social definitions. Does Harvey's comment mean to preclude the possibility that at a given moment one or the other might play a leading, decisive role in the transformation? Does he prohibit generalizing from many instances to the conclusion that, in the main, the social definition dominates in the transformation of biological reflexes? Rigid insistence upon the basic or universal reversibility of the transitivity between culture and biology may itself constitute a fallacy. More recently than Lewis Carroll and closer to the problem at hand, C. Wright Mills (*The Sociological Imagination*. New York: Oxford Univer. Press, 1959) attacks the methodology of those whom he labels "principled pluralists" for their fallacy of denying a key role to a particular factor in a welter of factors. Mills also shows how the pluralistic fallacy discourages participation in changing the culture, a concern shared by Harvey who finds similar antidemocratic propaganda associated with the fallacy of dichotomizing culture and biology. Our common interest in preserving democratic values ought to make Harvey re-examine his inference of a false and antidemocratic dichotomy lurking somewhere in my position that social definitions dominate and transform biological reflexes.

Sharing common values, I suggest we find a common meeting ground by translating our comments into neutral mathematical terms. Let us regard culture and biology abstractly as mathematical quantities. Then the issue boils down to whether culture and biology are doubly transitive and unconditionally equal to each other or whether the values of the culture and biology elements vary conditionally and differently from each other. Why should we strain at this gnat when we find stuck in our throat the camel of the wild interpretations of Harlow's experiments on "The Nature of Love" (*Amer. Psychologist*, 1958, 13, 637-685)? By means of a surrogate fetish, a doll in the paws of a monkey, we are supposed to swallow the notion that the predominantly social role of motherhood in the human is reducible to exclusively neurophysiological mechanisms in the monkey. Were the surrogate fetish not so subtle a carrier of fallacy, the absurdity would be self-evident. Suppose one of Harlow's monkeys tired of playing with dolls, went to the library of the University of Wisconsin, and seated himself between the Holy Bible and Darwin's *Origin of Species*. How seriously would we take the interpretation, "The monkey is trying to decide whether he is his brother's keeper or his keeper's brother?"

SOLOMON D. KAPLAN  
Lincoln State Hospital, Nebraska

May I do a few monkey tricks?

It would seem to me that colleague Jesse Harvey fundamentally did not grasp Solomon Kaplan's major thesis, as expressed in his comment.

To me, the heart of Kaplan's viewpoint is that

The social definition is not added on to a biological constant which remains unchanged, but the social definition dominates and transforms biological reflexes.

Certainly, there is vast material at hand in anthropology, sociology, and social psychology to point up this fact, and I do not intend to refer anyone to available sources. Even in the experimental field, the work of David Katz (I refer to the Swedish professor) in which he has observed that a chicken by itself eats like mad at a pile of corn to satiate hunger, and then a short while later, when several new chickens are introduced into the culture, the very well-fed one returns to the pile and eats its head off again. What can one say in this frame of reference regarding even the biologicality of hunger?

Nor does Kaplan's approach, as I understand it, delineate any dichotomy between biology and culture. Rather, it would seem to me it points up the fact that the very biologicalness of men is qualitatively transformed into new, different entities because of varied acculturations. *There is mankind, but there are also different man groups is how I understand the logic of Kaplan's viewpoint.* In the same sense, boiling water in a kettle, initially a result of increasingly rapid molecular motion, is a qualitatively different entity, a leap forward, as it were, to something new in steam.

Regarding the assertion of Harvey, that one should pooh-pooh the notion that culture represents some autonomous entity above and controlling the lives of others, I fear he is utilizing somewhat mechanistic, rose colored glasses in viewing the societal melodrama. For in fact, it does just that to an extremely important degree, even though, and these thoughts are not mutually contradictory, there is a range of movement possible where people can get out from under, so to speak.

But the range of movement is only possible to the degree people can see through the already elaborated social role expectancies (perhaps Eric Fromm would consider this part of his concept of the Social Unconscious) which, no matter how we may squirm about accepting them, are already there, and have been for years waiting to direct and, in fact, become part of our altered biologicalness, from the moment we are born.

Finally, I did not get any notion of antidemocratic impulses being strengthened in people by Kaplan's viewpoint, but I do have the impression, if one wants to make changes, one ought have a clearer notion of the obstacles in the way, and not to think, as Harvey suggests, that, glory-be, there is no entity above and controlling the lives of others.

EDWARD J. SUSSMAN  
Metropolitan State Hospital  
Norwalk, California



---

# Psychology in Action

---

## CONSULTING FIRM RESPONSIBILITY IN REPORTING TEST VALIDATION STUDIES

WENDELL L. FRENCH

*College of Business Administration, University of Washington*

THERE are two reasons why the following questions should be asked: "Are management consulting firms reporting the results of test validation studies?" and "If not, why not?" One reason has to do with professional responsibility and the other reason has to do with public relations.

Along with company personnel directors and psychologists employed by industry, consultants are probably in the most advantageous position in our society to do test validation studies and to report the results. Certainly ethical standards encourage such reporting. According to the publication *Ethical Standards of Psychologists* (APA, 1953):

As a scientist the psychologist is expected whenever possible to communicate the results of his research to other investigators, provided he judges these results to be of value to the development of psychology as a science or for the welfare of the public (p. 120).

In addition to professional reasons for publishing test validation studies, there are also some very important public relations reasons. This assumes that the public relations situations of consulting psychologists could be better, and that reporting test validation studies would help. The latter seems logical in that, from my experience, many businessmen have little confidence that the average consultant can demonstrate that a particular test has or can predict "success" in any job situation. The businessman, in turn, refrains from hiring a consultant for testing and interpretation, or for validating test batteries in his company. He does not want to pay for too much pioneering. These are bald statements, but I am convinced that, in essence, they are true.

That there is a need for management consultants and all others who provide psychological services to upgrade themselves in the eyes of the public and in the eyes of management seems to me to be self-evident. Psychological testing in particular has been under heavy attack. Witness such articles as "The Brain Pickers Can Cost You Your Job" by Martin Gross (1959) in *True* magazine; "The Fallacies of 'Personality' Testing" by William H. Whyte, Jr. (1954) in *Fortune*; and the

Appendix to the latter's (1956) book, *The Organization Man*. The point is *not* whether or not the criticisms leveled are valid—some of them most certainly are—the point is that criticizing psychological testing is a popular sport these days.

Criticisms of psychological testing are not new, of course. About fifty years ago C. S. Myers (1911) wrote an article entitled "The Pitfalls of 'Mental' Tests." It would seem, however, that in almost a half-century, practices would have progressed to the point where a magazine of the stature of *Fortune* would not find it worthwhile to devote eight pages to the way personality tests are used (Whyte, 1954). Not that there should not be criticism pertaining to any field, but a feature article of a negative and highly critical nature in a major business publication seems to me to point up the problem of inadequate public relations, and the need for improvement. Conscientious reporting of test validation studies might assist in this matter of public relations, both directly and indirectly.

In view of these important reasons for publishing test validation studies, and a strong guess that there is not much reporting, these questions, then, should be asked: "Are such studies being reported by management consulting firms?" and "If not, why not?"

In an attempt to get some index as an answer to the first question, the author examined some nine national professional journals or business magazines.<sup>1</sup> A list of journals was selected which seemed representative of the type to which the personnel executive would probably turn if his company were involved in a testing program, and which included a number of journals popularly read by executives in general, and by management consultants. Obviously, there was no attempt to cover all appropriate journals; all that was desired was to obtain a rough index as to the extent of reporting of test validation studies.

Here is what we found. In the 10-year period between January 1, 1949 and January 1, 1959, management consulting firms were responsible for approxi-

<sup>1</sup> The writer is indebted to Richard Robinson for assistance in searching through publications.

TABLE 1  
TEST VALIDATION STUDIES REPORTED BY MANAGEMENT  
CONSULTING FIRMS IN NINE PUBLICATIONS, 1949-59

Firm	No. of Studies
Psychological Corporation	11
Dunlap & Associates	9
Edward N. Hay & Associates	5
Stevenson, Jordan, & Harrison	5
Walter V. Clarke Associates	3
Science Research Associates	3
E. F. Wonderlic	3
Aptitude Test Service	2
Personnel Institute	2
Personnel Research and Development Corporation	2
Psychological Services of Pittsburgh	2
Richardson, Bellows, Henry, & Company	2
Social Research, Inc.	2
Worthington Associates	2
American Institute for Research	1
Booz, Allen, & Hamilton	1
L. Bamberger & Company	1
Bruce Payne & Associates	1
Byron Harless & Associates	1
California Test Bureau	1
Chicago Psychological Institute	1
Educational Testing Service	1
William James Giese & Associates	1
Luckman, Tarnopol, & Associates	1
Robert N. McMurray & Company	1
McMurray Hamstra & Company	1
Personnel Laboratory	1
Personnel Research Institute	1
Stevens Thurow & Associates	1
	—
	68

mately 68<sup>2</sup> test validation studies reported in some nine national, professional journals or business magazines. Thirty-seven were found in *Personnel Psychology*, 23 in the *Journal of Applied Psychology*, 6 in *Personnel*, 2 in the *Personnel Journal*, 2 in *Advanced*

<sup>2</sup> This number is cautiously large, because some studies were counted which were not strictly validation studies, e.g., normative studies which do not compare test scores with some criterion of success. However, it ought to be pointed out that there are probably some errors in this count. A few issues of these magazines could not be located, but the omissions of validation studies should be few because *Personnel Management Abstracts* were used to catch some of those which might have been missed. There are other errors which might have occurred: if authors did not identify themselves as being a member of some consulting organization, their contribution would not have been included in the total count; and not all reporting media were examined, as indicated above.

*Management*, and 1 study was reported in the *Harvard Business Review*. None was found reported in *Fortune*, *Personnel Administration*, and *The Personnel Administrator*. Table 1 shows the names of the firms reporting these studies.

It is not surprising that these studies were distributed over the various journals as they were. Because of editorial policy, we would not expect to find many in *Fortune*, but we would expect to find a relatively large number in *Personnel Psychology*.<sup>3</sup> *Fortune* features articles of broad, general interest to businessmen, while *Personnel Psychology* focuses more specifically on personnel research.

What is surprising, however, is that the total number of such studies reported seems very low in terms of the probable number of consulting firms offering psychological services, including testing. Counting the many small, one-man organizations, there are probably from 500 to 1,000 such firms in the United States. In his *Fortune* article, William H. Whyte, Jr. (1954) cites evidence of a much larger number. He stated:

Science Research Associates of Chicago, a leading test supplier, reports that within the last twelve months 700 new consultants have asked to be put on its approved list of customers (p. 118).

However, to be overly stringent because we are trying to prove a point, we tried to develop a more conservative count by examining (a) the *Directory of Consultant Members, American Management Association* (1957); (b) the *Directory of Psychological Services* (ABPS, 1957); (c) *List of Members, Association of Consulting Management Engineers, Inc.* (1956); and (d) the classified telephone directories of 13 large cities. It developed that there were some 236 consulting firms which, because of the nature of their other services or because they stated so specifically, probably offer psychological services, including testing. It seems fair, therefore, to say that 200 would be a cautiously low number as an approximation of the number of consulting firms offering testing services.

If we assume this very conservative number of 200 consulting firms offering psychological services, and then relate this number to the 68 test validation studies found in the journals and magazines, it follows that there was an average of about one in three consulting firms who reported studies during the 10-year period. Actually, only 29 firms reported validation studies, with 4 firms accounting for 30 of the studies, or about 45% of all those reported (see Table 1). Only 15%, approximately, of those firms probably performing psychological services, then, have reported in the above journals in the last decade. Thus, as a conservative

<sup>3</sup> Most of the studies found in *Personnel Psychology* were published in the "Validity and Normative Data Information Exchange" section of that journal.

estimate, and as an answer to our first question, it appears that only about one in seven of the consulting firms offering psychological services has reported test validation studies in the last decade. This is not a high score.

The answer to the second question "Why not?" or, more appropriately, "Why is there not more reporting of test validation studies by management consulting firms?" has several facets. There are several reasons which might well make the management consultant unwilling to publish the results of his studies—assuming, of course, that he does validation studies. In the first place, he is busy earning a living. The minutes, hours, or days which he spends on writing up research do not result in any immediate financial gain. In the second place, he may feel reluctant to press for permission to publish test data in the fear that it will jeopardize his relationship with his client. Third, he may feel that he cannot publish test data until the possibility of embarrassment to individuals and clients has passed. Fourth, he may be reluctant to publish the results of his costly research in the fear that ethical and competent competitors will use his tools and techniques to take business away from him. Fifth, he may be afraid that unethical or professionally unprepared people will set themselves up in competition to drain off both money and public confidence. He may feel that the present dearth of certification and licensing laws which have teeth in them results in very inadequate protection and that unethical competition is a significant danger.<sup>4</sup> Sixth, and related to the above, he may feel that brief reporting may be misleading, and since he does not have time for extensive reporting, he does none. Seventh, and this may be the most critical reason, there appear to be few journals interested in reporting test validation studies.

These are compelling reasons for not reporting test validation studies, but they should be examined as to their relative merits. Take the matter of the pressure of time and of earning a living, for example. In the long run, the consultant should be able to increase his profits if he is able to provide better services, and he will be able to provide more effective services if he has a larger body of knowledge to draw upon. As to jeopardizing his relationships with his clients, there should be no problem in persuading clients to permit publication, providing certain safeguards are furnished. He can probably arrange a standing agreement that testing results will not be used in any way which will embarrass individuals or the company, and then he

can use his best judgment as to when to obtain specific clearance. Furthermore, he can wait until he has worked for enough clients so that identification of any particular company would be difficult or impossible. As for competitors, he can recognize that there is a *quid pro quo* involved and that all legitimate consulting firms will benefit. In addition, he can work for more safeguards against malpractice, such as state licensing, and certification by the American Board for Psychological Services; and at the same time his publications can be used by the wise client as one evidence of professional competence which will separate him from the "con" man. He can assist in educating industrial officials to the dangers of adapting selection devices without thorough revalidation and in urging sufficient financial outlay to insure proper validation.

The latter is related to the problem of not having time to report in detail, and the reluctance to report something briefly. Whether or not to publish brief reports is certainly a debatable question. The reader is probably familiar with the type of reporting which, until recently, was featured in the "Validity and Normative Information Exchange" of *Personnel Psychology* and which was used in the *Handbook of Employee Selection* by Dorcus and Jones (1950). The fact that the "Validity and Normative Information Exchange" feature in *Personnel Psychology* was recently discontinued may mean that the editors decided brief reporting was inadequate.<sup>5</sup> Obviously, there are dangers in such reporting. Brief reports tell us little of the conditions surrounding the research, little about the research design, nor do they tell us much about the criterion. However, the writer's opinion is that, although more detailed reporting would be better, such brief reporting is *much* better than nothing. Brief reporting tends to get into print abstracts of research which might not otherwise appear for many months or even years. (For example, on the inside cover of the *Journal of Applied Psychology* there is the statement: "There is a lag of approximately twelve months between receipt and publication of an article.") Brief reporting is helpful because it tends to reduce the researcher's problem in finding clues as to instruments which might prove useful for a particular situation and which warrant further research. I think the answer to the problem of brief reporting is not to withhold publication of validation studies, but to continue to educate researchers, test users, and industrial people in the proper use of such studies, while simultaneously encouraging the preparation and publication of the more detailed type of report.

<sup>4</sup> A 1957 report by Gustad in the *American Psychologist* stated that "Seventeen states and two municipalities now certify or license psychologists either by law or by the nonstatutory action of state associations" (p. 343).

<sup>5</sup> The "Validity and Normative Information Exchange" did not appear in the spring, summer, and autumn issues; but the "Validity" section has subsequently been reinstated with the winter 1960 issue of *Personnel Psychology*.

The fact that there seem to be few journals interested in reporting test validation studies seems to be the most difficult problem of all. The editor of one very successful journal tells me that that particular journal would be swamped by validation studies if editorial policy permitted frequent publication of such studies. When manuscripts by consultants are selected, policy requires that they be of broad, general interest to executives and that they must suggest solutions which do not require the services of that particular consultant.

Implicit in the above editorial policy is the belief that validation studies are not considered of broad, general interest to executives, and that the consultant is likely to report validation studies in such a way as to leave the reader dependent upon the particular author for assistance if he wants to use a certain test or test battery. Perhaps the first problem cannot be solved until there are more journals of the *Personnel Psychology* type which are interested in publishing research in industrial psychology. The second problem can be solved by editors refusing to publish validation studies utilizing tests which cannot be obtained by any qualified professional psychologist. The kind of reporting which "advertises" a test which only one consultant has available seems to be purely and simply a business "plug." On the other hand, a professional research study, properly reported, serves both business and the field of applied psychology, and whether or not such reporting immediately results in more business for the reporter is beside the point.

The writer strongly urges consulting firms to publish test validation studies in national journals and maga-

zines, and at the same time to promote protective licensing laws, associational controls, and certification. In the long run, such reporting can only result in an upgrading of professional capabilities, improved public relations, improved assistance to clients, broader utilization of valuable services, and higher profits for the management consulting profession.

At the same time, journals should be encouraged to publish test validation studies and to reject studies using tests not available to qualified psychologists. In addition, consulting psychologists should consider the merits of starting one or more new journals, perhaps focusing solely on industrial testing problems.

#### REFERENCES

- AMERICAN BOARD FOR PSYCHOLOGICAL SERVICES. *Directory of psychological services*, 1957. St. Louis: ABPS, 1957.
- AMERICAN MANAGEMENT ASSOCIATION. *Directory of consultant members, 1957-58*. New York: AMA, 1957.
- AMERICAN PSYCHOLOGICAL ASSOCIATION. *Ethical standards for psychologists*. Washington, D. C.: APA, 1953.
- DORCUS, R. M., & JONES, M. H. *Handbook of employee selection*. New York: McGraw-Hill, 1950.
- GROSS, M. L. The brain pickers can cost you your job. *True*, 1959, 62-65, 72, 82-85.
- GUSTAD, J. W. Psychology in the states. *Amer. Psychologist*, 1957, 12, 341-343.
- MYERS, C. S. The pitfalls of "mental" tests. *Brit. med. J.*, 1911, 1, 195-197.
- WHYTE, W. H., JR. The fallacies of "personality" testing. *Fortune*, 1954, September, 117-121.
- WHYTE, W. H., JR. *The organization man*. New York: Simon & Schuster, 1956.



## Psychology in the News

### Deus ex Machina . . .

A few years ago there was a period in the development of atomic energy when every week brought a new article on the marvelous things which atomic power or radioactive isotopes were just about ready to start to begin to do. In that time every month brought some convention at which physicists spoke about tomorrow and tomorrow, and in the hotel lobbies the consultants sold their services to consultants' consultants, as to how to make the most of the things and the dollars surely to arrive.

The field of teaching machines is certainly well advanced by article upon article into this wonderful world of tomorrow. It even seems to be getting closer to the workaday world of today, and the producer's and customer's dollar may any moment provide a solid gold standard behind the consultants' consultants.

This department can no longer note each mass media discussion of teaching machines, but some will surely continue to deserve special mention. The New York Times of January 22, in its editorial page news-feature "Topics," went overboard for this coming revolution—and minced no words about the psychologist and the hero of the drama. In part, the Times said:

Most automation advances are the brainchild of engineers. In the case of the teaching machine, though, our hero is the psychologist, who every day finds new worlds to conquer. In this age of increasing specialization, he is the specialist's specialist. On Madison Avenue he tells the account executive why people buy what they do and how they can be persuaded to buy more. He tells hardened Marine Corps commanders why Jones would make a good drill sergeant and Smith would not. In the teaching technique, he serves as middleman between scholar and pupil. He is not a specialist in any particular subject but rather a specialist in the learning process itself. In preparing a teaching machine course, he takes an assortment of facts about history, algebra or music and arranges them in accordance with his specialized knowledge of the human psyche.

In conclusion, the Times acclaimed the teaching machine in these words:

But the biggest use of the teaching machine may come from the emerging nations of Asia and Africa, where there is urgent need for assistance to bring their peoples into the modern world. We often shake our heads over the machine

and what it does to life. But the teaching machine sees the machine at its best and most useful.

The message to psychologists, it would seem, is that, if the programs can be done, we will have the best of all possible machines in the best of all possible worlds. We had better cultivate our garden.

\* \* \*

### The King and Psi . . .

This department has never properly noted that Crown Prince Akihito of Japan is a serious researcher in fish psychology and fish brain morphology. Newsweek recently reported his interest in these words:

Although he can converse intelligently on almost any subject, any original thoughts are reserved for the subject of fish. . . . Now in his well-equipped small laboratory in a separate building on the Togu grounds come professors and experts to lecture the Prince on fish psychology. . . . For six months, he and Prof. Kaname Okada of the National Science Museum tried unsuccessfully to remove the cerebrum of living carp without killing the fish. Although Akihito operated on nearly a hundred fish in all, only one of the subjects lived as long as a month.

Recently, the Prince has been studying, under a microscope, the brains of various species of gobies in an attempt to map their cerebral functions. . . . And when Akihito meets somebody who can talk about fish, he is delighted. At a formal dinner party this month, U.S. Ambassador Douglas MacArthur II, whose hobby is skin diving, enthralled the Prince with a detailed eyewitness description of how a starfish eats an oyster.

This interest probably makes the Prince the world's highest paid government researcher. It is noted that he sometimes tells his friends: "You are paying for me with your taxes. What a burden we are to the country." Other government researchers have known that feeling. But Newsweek reports that recently he has felt much better about the future, instead of feeling bitterly that "I shall be the last Emperor."

Observers attribute this to his happy married life, but perhaps it may also indicate he is learning better how a king may look at a carp.

\* \* \*

### In Suburbia: Beware—Bad Dog . . .

According to the cover of Good Housekeeping magazine:

1961's first really important book is *The Split-Level Trap*, which tells its readers about "the suburbs' most devastating emotional tensions and how to cope with them."

This book is by Richard E. Gordon, a psychiatrist, his wife, Katherine K. Gordon, working on an advanced degree in social psychology, and Max Gunther, who has written many science articles for national magazines.

The New York Times "Book Review" spoke quite favorably of this book, and AP will not compete with CP, except for one tiny comment. The undersigned read the book itself, and concluded it was about what would be expected from the blurb in *Good Housekeeping*:

In dramatic, true-life psychological case-histories of people who could be your own neighbors, here is the hidden, intimate—and shocking—story of life as it is lived behind the slick split-level facade of modern suburbia. Here, too, is a way to make such living fuller and better.

Only a certain blend of new insight and old-fashioned virtues will enable one to survive the hells of Halcyon Heights, it appears. Millions seem to live in these horrible sunshiny places, unaware of the stigma attached to them, but from what this down-towner hears about "Disturbia," it appears that any stick will beat this dog.

And any dogma can beat this stigma!

\* \* \*

*Psychological Counsel Recommended for Honey-moon . . .*

In the honeymoon period of the new administration, Jerome Wiesner, like other presidential aides,

received "a good press" on the report of his space task force, and approval for his appointment as the new Chairman of the President's Science Advisory Committee. This is the post formerly held by George Kistiakowski and before him by I. I. Rabi.

Most interesting to our readers, however, may be the firm critical note sounded by the New York Times on the space report. Herewith is the concluding paragraph of a Times editorial:

Certain features of the report, however, must be regarded as disappointing. The possibilities of international cooperation in space exploration are mentioned briefly and then ignored, though an imaginative approach in this area could bring rich technical, economic, and perhaps even political, dividends. The task force says that "industrial and governmental communications satellites appear practical and economically sound," but makes no reference to the complex political and legal problems which abound in this field. It is unfortunate that Professor Wiesner did not give the political and social scientist more representation on his task force.

The reader may be assured that many key persons in Washington this winter have been considering and reconsidering the various important committees and science boards in official Washington which in psychologists' judgment could and should benefit by including someone from the behavioral sciences in their membership. These persons were heartened by this suggestion that "political and social scientists" should be better represented on such tasks as appraising the rocket and space program.

—MICHAEL AMRINE

---

## Psychology in the States

---

### Order—and Psychologists—in the Court

This is not like squeezing the grapefruit one more time for that last bit of juice. It is more like remembering that there is the other half still untouched.

Last September this column made a foray into the courtroom, did a bit of reconnoitering with the help of psychologists who knew the terrain, promptly took cover again to study the field maps. With the help of our colleagues who had lived among the natives, we interpreted the language of the land of law, looked a bit at its culture, and found the setting if not unsettling at least awfully awesome.

The subject seems to appeal to our readers, who continue to express interest, report experiences, and, all in all, remind us that forensic psychology is here to stay. We turn, then, to that other half of the questionnaire which was being pretested on a group of some 40 colleagues describing some 80 professional brushes with the law (with a range of from 1 to 10 cases, a mode between 1 and 2). And here are some of the things we find.

*Where Did You Go? Court. What Did You Do? Testify.* The author of the best seller will pardon us if we adapt his apt title. It captures so well the spirit of our situation. For apparently psychologists go to all kinds of courts to testify in all types of cases on all sorts of issues.

The list of courts in which our respondents have appeared covers the legal waterfront: federal, state, district, circuit, county, municipal. There is the superior court, the state supreme court, and the more restful sounding supreme bench. There are probate courts, domestic relations courts, and juvenile courts. And, if one wants more exotic places where psychologists have been, there is the County Assizes of the Supreme Court of Canada as well as Queen's Bench Court.

The actions involved, as one might suspect, are hardly all of a piece. We referred to some of the more grisly in the earlier column. We add here only that, no matter what the case may be, from traffic fine to felony, whichever side tries most to win it, psychologists may well be in it.

In the returns, cases in criminal law outweigh

those in civil law, although both are well represented. Our respondents have testified almost twice as often for the defense as for the prosecution, although the latter figures in 26 of the cases. We shall not bandy *amicus curiae* about as though comfortable with the language, but psychologists did appear as "friend of the court" too and here seemed to feel particularly comfortable.

*Tell Us Not in Mournful Numbers.* Maybe it is that we have a courtroom set at the moment, but some of the tallies on our sheets look innocent enough, others not so. The former seem to report pretty straightforward facts, the latter to reflect as well our respondents' judgments, philosophies, and frustrations. But the place of personal value in this world of legal fact tells its own story, and we shall try to capture some of the sentiments of our questionnaire-quizzicists in addition to their raw data. If someone added that our own interpretations of the interpretations add still another layer to this legal layer cake, we would not argue that case in court.

How, first, are psychology and psychologists received? Rather well, the returns suggest. Two of our questions asked, respectively, whether the psychologist's right to testify as an expert witness was contested and whether the substance of his testimony was contested. We would have hypothesized that, at this stage of our legal initiation, the role of expert witness would be granted grudgingly, but, that once granted, the substance of what we had to say would find fairly ready acceptance. It does not work that way, suggest the returns. In only one-third of the cases described was the legitimacy of the psychologist as expert witness contested. On the other hand, in the cases reported, the substance of the testimony was about as often contested as not. Most often, the villain of the piece proved to be not a psychiatrist—although this sometimes happened—but the attorney for the opposition.

Why not qualify the psychologist as expert witness without quarrel? Attorneys found many reasons, or at least tried, often without convincing the judge. There were, as one might expect, objections to the psychologist as a "medical" witness (despite his shuddering at the term), allegations that his

PhD was not a medical degree (despite his "Amen!"), reservations about his right to diagnose "mental disease," questions about the propriety of his testifying to brain injury and his right to practice psychotherapy. Ironically, as if to prove that justice does triumph, a case in which the judge, after admitting the psychologist's expertness, refused to allow him to testify, was remanded to the Court of Appeals.

Once having qualified, however, the psychologist as expert witness may expect to find a hot seat (if not a hotfoot); and while our respondents may not have left with much love for their cross-examiners, they (the psychologists) carried away a healthy respect for them (the lawyers). Cross-examination there was, indeed—in three-fourths of the cases—and if there is any unanimity among our expert witnesses, it is to the effect that, if they should not have stood in bed, as the man once said, they could comfortably have done without some of the attorneys' judicial jujitsu.

Attorneys were neither born yesterday, nor have they failed to hear about *Psychological Abstracts*. If he who would call the tune must pay the piper, he who would sit on the witness stand must pass a second doctoral oral examination. Courtroom questions may not always seem just, as our respondents amply point out, but the slings and arrows of outrageous attorneys must be dodged or fielded, and this is easier said than done.

Can one "cram"? Well, here are a few of the topics. How do tranquilizing drugs affect test performance, if they do? Just what is within the "normal range"? Might seeing the psychiatrist's report influence the psychologist's interpretation of his test findings? How important is academic record as an index of mental ability? Would it not be more appropriate to test *both* parties in a custody action? How can the irresistible character of compulsive behavior be measured? Can the examination of 2 weeks ago establish the mental state which existed 10 months ago? How is it that psychologists for the opposing parties interpret their findings differently?

Fortunately, the latter situation is seldom reported. Either psychologists tend to testify on the same side of the bar or their findings are not that discrepant. More usually, their co-testifiers come from other professions. Asked whether the side for which they testified used expert witnesses in addition to themselves, the respondents replied yes

twice as often as no. By far the most frequent companion-in-court was the psychiatrist; neurologists, neurosurgeons, pediatricians, and general practitioners figured too, however. So did social workers. And among the rest were a probation officer, an optometrist, a specialist from the police laboratory, even a technical expert on subway operation.

The latter gentleman seems not at all out of place as one catches the spirit of the thing. At least attorneys feel no qualms about asking the psychologist testifying in a compensation case whether he, like the accident victim, has ever ridden in a subway. And they may well like to know—regardless of what the Rorschach showed—whether the psychologist in the case of a hunting "accident" has ever hunted himself. If the question has little more than face validity as far as the science of it is concerned, its answer may well weigh as heavily with judge and jury as the more technical message our colleague is trying to read into the record.

Few punches get pulled in this intellectual slugfest, and some of them jab hard at the soft underbelly of the profession. Attorneys have heard of reliability and validity. They have read not only *The Organization Man* and *The Hidden Persuaders* but, indeed, some of our own journals, only to find that a "significant difference" is often not found where it might be and that some skeptical psychologists seem to regard the level of certitude of the MMPI as "maybe might perhaps is." This democratic profession with its free press is one we are proud to be part of. If our colleagues in the courtroom are sometimes prone to wish it were a bit less frank about its shortcomings, we could not blame them.

*Be That as It May.* Yes, be that as it may, honesty does seem to pay. In 70% of the cases reported, the verdict was in favor of the side on which the psychologist testified. This is interesting, though perhaps not important. What is important and also interesting is the fact that, except in three cases, the psychologist perceived his testimony as having been favorably received once it had been allowed and fully presented. Indeed, in three-quarters of the cases a full presentation was allowed, only one-quarter of the cases having restricted the expert witness to answering specific questions. As if to bolster egos further, in four-fifths of the cases the psychologist presented his own testimony; where an alter ego was requisitioned, it was almost in-



variably a psychiatrist, although a probation officer filled the role in one instance, a department commissioner in another.

Now, either attorneys regard psychologists as intelligent, versatile, hardy souls or else they underestimate the rigors to which the expert witness is exposed. Almost half the respondents report having received little or no advanced instruction in courtroom etiquette or the rules of the legal game. True, in several cases the attorney took pains to explain such features as rules of evidence, translation of psychological data into legal terms, and questions likely to be asked. More often than not, however, there were simple injunctions about keeping replies brief, answering only questions asked, and holding one's temper. One attorney, no doubt a college professor at heart, suggested a list of recommended readings.

All things considered, our expert witnesses managed to preserve both dignity and reputation nonetheless. Cases received publicity ranging from brief mention in the local paper to sensational front-page headlines complete with radio and television coverage. Rarely was the psychologist either star or villain, however. His testimony was usually mentioned, in a few instances highlighted, even presented verbatim, in most cases rather soberly and briefly described. And if we take the pulse of our respondents accurately, the lack of fanfare leaves them calm, perhaps relieved.

Again, if we interpret our respondents' moods correctly, there are few, if any, frustrated lawyers among them. They have neither been overeager to appear for the sake of appearing nor hesitant about declining where all did not seem right. It did not seem right when findings were not objective enough to warrant testifying with reasonable certainty, when there was insufficient time to prepare testimony properly, or when one was asked to appear in a private case before the court in which he was employed. It seemed even less right when an attorney seemed to be using psychology in the guise of introducing "scientific method" in an open-and-shut case or asking that opinions be rendered on a minimum of evidence. Though good testifiers have not avoided their duty, poor testimony has been dutifully avoided.

*On Settling out of Court.* As several of our respondents have pointed out, our revised questionnaire will need to take fuller account of the fact

that not all testimony takes place in adversary situations. Appearance before an administrative tribunal can be, and is, equally important. In fact, for some psychologists this is the more usual situation—one which, they remind us, may have more far-reaching consequences than the verdict in the drugstore robbery.

If there are commissions before which to appear, psychologists have appeared before them. The voice of psychologists, like that of the turtle, is coming to be heard throughout the land, before committees of the United States Senate and House of Representatives, state legislatures, the city transit authority, and the governor's commission, to name but a few. The topics are many: delinquency, mental health, commitment procedures, professional fees, military affairs, obscene literature, and mental retardation, to name but a few again. Where in adversary trial situations, the witness is held to facts, often in yes-or-no terms, testimony before the administrative board admits of opinion and philosophy and value and prediction. Where the courtroom requires answers in sentences, the administrative commission permits them in paragraphs. And here there have been psychologists who have said a mouthful.

*Has the Jury Reached a Verdict?* Our jury of expert witnesses has reached many. We intend to use them partly to understand the whole problem better, partly to build the better questionnaire that our world of expert witnesses will, hopefully, beat a path to the door of. Or, said without the legalese we seem to have acquired in the process, the intent is to undertake now a sample survey of the APA membership with regard to experiences in the new world of forensic psychology.

For the moment, we express sincere thanks to the corps of expert witnesses who have helped pretest the questionnaire. Its last question asked for prescriptions and proscriptions, and we got plenty. Some sounded like notes of caution, others like Polonius' advice to his son. But all have helped convince us that the business of testifying separates the men from the boys.

—JOSEPH M. BOBBITT

*Chairman*

Board of Professional Affairs

ERASMUS L. HOCH

*Administrative Officer*

State and Professional Affairs

# Notes and News

The American Board of Examiners in Professional Psychology, Inc. publicly expresses its appreciation to the following 226 Diplomates who served as Readers of essay questions of candidates taking its written examinations in November 1960:

Michael Adams  
Mary D. Ainsworth  
William P. Albaugh  
Irving E. Alexander  
Robert M. Allen  
Thelma Alper  
Charlotte H. Altman  
Dorothy Anderson  
Gordon V. Anderson  
Harvey Austrin  
Stewart B. Axtell  
Gertrude Baker  
Lawrence Baker  
Joseph E. Barmack  
Harold Basowitz  
Libby A. Bass  
Chester C. Bennett  
Emanuel M. Berger  
Trent E. Bessent  
Arthur J. Bindman  
Leonard Blank  
Theodore H. Blau  
Douglas D. Blocksma  
Jack Blumenkrantz  
Frank H. Boring  
Henry Borow  
Glen Brackbill  
Katherine Bradway  
Roy Brenner  
Alice P. Breslow  
Joseph Brewer  
Ruth L. Bromberg  
Earl C. Brown  
John J. Brownfain  
Maurice O. Burke  
Arnold H. Buss  
Robert Callahan  
Francis M. Canter  
Gerald Carter  
Loretta K. Cass  
Robert C. Challman  
Bertram D. Cohen  
David Cohen  
Jacob Cohen  
Rex M. Collier  
William C. Cottle  
Bernard J. Covner  
Orlo Crissey  
S. Thomas Cummings  
Charles A. Dailey

Paul Daston  
Henry P. David  
Joseph G. Dawson  
Austin Des Lauriers  
Allen T. Dittman  
Wesley A. Dunn  
Marvin D. Dunnette  
Donald Ehrman  
Albert Ellis  
Anna S. Elonen  
Seymour Epstein  
Leonard D. Eron  
Edmond F. Erwin  
Norman L. Farberow  
Herman Feifel  
Marvin J. Feldman  
Harold J. Fine  
Reuben Fine  
Ben C. Finney  
Robert P. Foster  
Oliver D. Fowler  
Samuel H. Friedman  
Erika Fromm  
Clayton Gerken  
F. Harold Giedt  
Harold Gilberstadt  
Donald D. Glad  
Martin R. Gluck  
Fred J. Goldstein  
Leonard D. Goodstein  
Harold A. Goolishian  
Leon Gorlow  
Samuel Granick  
Donald L. Grant  
Zoltan Gross  
George M. Guthrie  
Stephen Habbe  
Ray C. Hackman  
John M. Hadley  
Gerard Haigh  
Julia C. Hall  
Florence C. Halpern  
Roy M. Hamlin  
Molly Harrower  
A. Arthur Hartman  
Norman Harway  
Alfred B. Heilbrun  
Ruth Bishop Heiser  
Verda T. Heisler  
Leo A. Hellmer

Carl Hereford  
Ernest A. Hirsch  
Jules D. Holzberg  
Philip S. Holzman  
Thomas W. Howard  
Marvin Hyman  
Eugene H. Jacobson  
Leota L. Janke  
Laverne C. Johnson  
Walter F. Johnson  
Wendell Johnson  
Goldie R. Kaback  
Marvin W. Kahn  
Solis L. Kates  
Raymond A. Katzell  
Bill L. Kell  
Barbara Kirk  
James J. Kirkpatrick  
D. B. Klein  
Irwin J. Knopf  
Frank J. Kobler  
William S. Kogan  
Albert Kostlan  
Leonard Krasner  
Julian J. Lasky  
Carl G. Lauterbach  
Wilbur L. Layton  
George Lehner  
Murray Levine  
Maurice Lorr  
Laurence S. McGaughan  
William McGehee  
Edward J. McLaughlin  
Louis L. McQuitty  
Robert Malmo  
Herbert B. Malos  
Joseph Mark  
John B. Marks  
Elmore A. Martin, Jr.  
Joseph D. Matarazzo  
Arnold Meadow  
Bernard Meer  
Ivan N. Mensh  
Archer L. Michael  
Lovick C. Miller  
Robert C. Misch  
Stanley Moldawsky  
Fannie D. Montalto  
Hamilton M. Moody  
Henry H. Morgan  
O. H. Mowrer  
George A. Muench  
C. Roger Myers  
Martin L. Nass  
Sherman Nelson  
Lawrence I. O'Kelly

David H. Orr  
Horace A. Page  
Oscar Parsons  
Leon A. Pennington  
Harold B. Pepinsky  
Melvin Perlman  
Zygmunt A. Piotrowski  
Karl E. Pottharst  
Ernst Prelinger  
Sidney Prince  
Kenneth Purcell  
Harold Raush  
Marvin Reznikoff  
Gilbert J. Rich  
Bernard F. Riess  
Alexander C. Rosen  
Alan K. Rosenwald  
Alan O. Ross  
Joseph Samler  
Bernard Saper  
S. Stansfeld Sargent  
William Schofield  
Robert B. Selover  
Georgene H. Seward  
Stewart B. Shapiro  
Joseph G. Sheehan  
Lewis J. Sherman  
E. Joseph Shoben  
Saul M. Siegel  
Reuben Silver  
James S. Simkin  
Irving Simos  
J. O. Sines  
William B. Singer  
Sydney R. Smith  
William Soskin  
Fred E. Spaner  
J. Marvin Spiegelman  
George Spivack  
N. Norton Springer  
Bernard Steinzor  
John A. Stern  
Rae Ann Sternberg  
Barbara M. Stewart  
Dorothy Stock  
Murray S. Stopol  
Joseph Stubbins  
Norman D. Sundberg  
Kenneth S. Teel  
Clare M. Thompson  
Joseph Tiffin  
Leona E. Tyler  
Charles A. Ullmann  
John M. Vayhinger  
Claire Vernier  
Edith Weisskopf-Joelson

Charles Wenar  
Joseph M. Wepman  
William M. Wheeler  
Carroll A. Whitmer  
Harold Wilensky  
Clarence L. Winder  
Robert D. Wirt

Zelda S. Wolpe  
Philip Worchel  
Wilson Young  
Carl N. Zimet  
Irla Lee Zimmerman  
John V. Zuckerman  
Marvin Zuckerman

Dik Warren Twedt, of Faison & Twedt, Inc., has been elected President of APA's new Division 23, the **Division of Consumer Psychology**.

The **Eastern Psychological Association** announces its Placement Service to be operated in conjunction with its Annual Meeting (April 7-8, 1961). The Placement Service will be located on the eighteenth floor of the Bellevue-Stratford Hotel and will be open during the following hours: Thursday, April 6, from 4:00 through 8:30 P.M.; Friday, April 7, from 9:00 A.M. through 5:00 P.M.; and Saturday, April 8, from 9:00 A.M. through 3:00 P.M. The Chairman of the EPA Placement Committee is: James F. Adams (Department of Psychology, Temple University; Philadelphia 22, Pennsylvania). General inquiries regarding the placement facilities should be addressed to the Chairman. Applicants and employers are urged to preregister with the Placement Service. Forms may be obtained by writing to: Janice P. Fish; APA Central Office; 1333 16 Street, N.W.; Washington 6, D. C.

**John W. Cotton**, of the University of California at Santa Barbara, represented the APA at the meeting of the National Advisory Committee for the Minnesota National Laboratory in St. Paul on January 12-13, 1961.

**John M. Macmillan**, of Canada Packers Limited, represented the APA at the inauguration of Murray George Ross as President of York University on January 24, 1961.

**Erna Charlotte Barschak**, of Oxford, Ohio, died in November 1958.

**Edward T. Jordan**, of Terre Haute, Indiana, died on December 26, 1960.

**Irving Lorge**, of Teachers College, Columbia University, died on January 23, 1961.

**Christian Ruckmick**, of Miami, Florida, died on January 7, 1961.

Roger Bellows will be on leave from Rutgers University during the spring as Visiting Professor

in the School of Business Administration at the University of Miami.

**Neal M. Burns**, of the Naval Air Material Center, Philadelphia, has been appointed consulting editor to the *Journal of Psychological Studies*.

**Gerald Clayton Carter** has been named Assistant Dean of the University of Illinois Division of University Extension.

**Robert H. Fortier** and **Eugene L. Mariani** have been appointed District Mental Health Consultants in the community mental health consultation program of the New Mexico Department of Public Health; Fortier is located in Roswell, Mariani in Gallup.

**Norman Garmezy** has accepted appointment as a member of the Psychology Department and of the Center for Personality Research at the University of Minnesota.

Glaser, Snowden & Associates announces the addition of **Leslie Navran** to the staff of the Pasadena office. **Vincent Glaudin** has joined the Portland office as a part-time associate.

**Albert Hastorf**, now at Dartmouth, will in September 1961 join the Psychology Department and the Graduate School of Business at Stanford University.

#### At Pennsylvania State University:

**Sidney Siegel** has been appointed Research Professor of Psychology.

**John M. Warren** has joined the faculty as Associate Professor of Psychology to develop the laboratory for physiological and comparative psychology.

**James L. Loomis** has accepted a visiting appointment as Assistant Professor of Psychology.

**Leon Gorlow** has been named Head of the Clinical Section.

**Jerome D. Schein** has been appointed Director of the Office of Psycho-Educational Research at Gallaudet College.

**E. W. Senderling** has become a partner in Nordli, Wilson Associates; he will direct the Chicago office of the firm.

**Charles E. Skinner**, Visiting Professor at Southern Illinois University, was recently honored by Prentice-Hall, Inc. with the presentation of a special

leather-bound copy of his book *Educational Psychology*, now ranking among the firm's 55 best-selling college texts.

**Lloyd Standlee** is now Head of the Proficiency Measurement Research Branch, Training Research Division, United States Naval Personnel Research Field Activity in San Diego, California.

**John F. Strickland** has been appointed to the staff of National Analysts, Inc. in Philadelphia as Director, Visual Impact Laboratory.

APA members currently serving on the Psycho-Social Study Section recently formed by the United States Office of Vocational Rehabilitation are: **Theodora M. Abel**, Postgraduate Center for Psychotherapy, New York City; **Edward S. Bordin**, University of Michigan; **Joan H. Criswell**, Executive Secretary of the section; **John G. Darley**, Executive Officer, American Psychological Association; **Samuel A. Kirk**, University of Illinois; **Victor Raimy**, University of Colorado; **Edward J. Shoben**, Columbia University; **William M. Usdane**, San Francisco State College.

The Association for Group Psychoanalysis, Inc. is offering a limited number of scholarships for its basic course in group psychoanalysis for its seventh season, 1961-1962. For further information, write: Apartment 4B; 50 East 72 Street; New York 21, New York.

Dunlap and Associates, Inc. have established the **Dunlap and Associates Research Fellowship in Engineering Psychology** in the Department of Psychology at the University of Michigan. This fellowship of \$3,000 is to be awarded annually to a graduate student working on a thesis research problem in an area especially related to engineering psychology.

The *Scientific Advisory Committee to Licensed Beverage Industries, Inc.* invites applications for grants-in-aid of research on knowledge, techniques, and methods of dealing more effectively with the problem of alcoholism. Grants cover research in sociology, psychology, biochemistry, pharmacology, and clinical medicine. For further information, write to: SAC, LBI; 155 East 44 Street; New York 17, New York.

The *Division of Biological and Medical Sciences* of the **National Science Foundation** announces that the next closing date for receipt of basic research proposals in the life sciences is May 15, 1961. Proposals received prior to that date will be reviewed at the summer meetings of the foundation's advisory panels, and disposition will be made approximately 4 months following the closing date. Proposals received after the May 15, 1961 closing date will be reviewed following the fall closing date of September 15, 1961. Inquiries should be addressed to: DBMS, NSF; Washington 25, D. C.

Undergraduates will have the opportunity this summer or during the coming academic year to work with scientists as a result of the National Science Foundation's *Undergraduate Research Participation Program* designed to stimulate interest of superior students in scientific research, to widen their understanding of scientific method, and to improve their ability to employ scientific investigative procedures. Students receive nominal stipends while engaged in the program and are chosen on the basis of applications to the Program Directors at the institutions to which grants have been made. The URPP has announced grants to the following institutions which include psychology in their program:

*Colgate University*: Raymond J. Myers, Department of Zoology, Hamilton, New York

*Indiana University*: Roger W. Russell, Department of Psychology, Bloomington, Indiana

*Pennsylvania State University*: William F. Prokasy, Jr., Department of Psychology, University Park, Pennsylvania

*Pomona College*: Alvin L. Beilby, Department of Chemistry, Claremont, California

*Roscoe B. Jackson Memorial Laboratory*: John L. Fuller, Assistant Director (Training), Bar Harbor, Maine

*Rutgers University*: Donald G. Forgays, Department of Psychology (Douglass College), New Brunswick, New Jersey

*State University of Iowa*: Don Lewis, Department of Psychology, Iowa City, Iowa

*Syracuse University*: Wallace R. McAllister, Department of Psychology, Syracuse, New York

*University of California, Santa Barbara*: Robert M. Gottsdanker, Department of Psychology, Santa Barbara, California

*University of Kansas*: Frederick E. Samson, Department of Physiology, Lawrence, Kansas

*University of Kentucky*: J. R. Meadow, College of Arts and Sciences, Lexington, Kentucky

*University of Oregon*: Harry A. Shoemaker, Department of Psychology, Eugene, Oregon



*University of Rochester:* S. D. S. Spragg, Department of Psychology, Rochester, New York

*University of Utah:* M. Duane Bown, Department of Psychology, Salt Lake City, Utah

*Vanderbilt University:* Stanford C. Ericksen, Department of Psychology, Nashville, Tennessee

*Western Reserve University:* Jan H. Bruell, Department of Psychology, Cleveland, Ohio

*Yale University:* Ralph Norman Haber, Department of Psychology, New Haven, Connecticut

The Life Sciences Research Division of the Air Crew Equipment Laboratory, Naval Air Material Center, Philadelphia, has established a new **Environmental Stress Branch**, with Neal M. Burns as Branch Head, to deal with the problems of confinement and psychophysiological measurement of stress.

The booklet "Home Care of the Mentally Retarded Child" has been reprinted by the Training School at Vineland, New Jersey.

A new laboratory is being built at the **University of Chicago** to enable the study of animals under conditions close to their natural habitat. Instead of cages, each species will have room to roam within a given area, uncaged. Various patterns of behavior will be recorded and catalogued simultaneously on movie film and sound tape in research projects. Eckhard Hess will be supervisor of the new laboratory.

The **Creativity Research Exchange**, sponsored by Educational Testing Service, distributes research reports, bibliographies, statements of hypotheses, short theoretical expositions, and other material concerning creativity which are made available by participating research workers. *Anyone interested in distributing or receiving such material should write to:* Lawrence J. Stricker; Educational Testing Service; 20 Nassau Street; Princeton, New Jersey.

On February 6-8, 1961 the **Vocational Rehabilitation Program** at New York University held a workshop on the use of prevocational evaluation units by state rehabilitation agencies.

The **National Conference on Driving Simulation** was held on February 27-March 1, 1961 in Santa Monica, California. For further information, write to: NCDS; 200 Ring Building; Washington 6, D. C.

A **Space Age Conference** was held at MacMur-

ray College on March 3-5, 1961 to consider from psychological, legal, and theological points of view the problems arising in space exploration.

District 65, RWDSU/AFL-CIO (13 Astor Place; New York City) started an 8-week course on January 24, 1961 on what members can **expect when they retire**; the sessions are devoted to such topics as income sources, mental and physical health, family relations, housing and leisure time activities, as well as employment opportunities.

The 1961 **Lucile P. Morrison Lecture Series** at the Western Behavioral Sciences Institute began on January 6 with "The Acquaintance Process" by Theodore M. Newcomb. Forthcoming lectures are: "Development and Interactive Aspects of Hypnosis," Ernest R. Hilgard, April 7; "The Allures of Ameaning in Modern Psychology," Sigmund Koch, May 12; and "Our Best Moments—What They Do for Us," Abraham H. Maslow, June 30.

The twentieth Annual Meeting of the **American Society of Group Psychotherapy and Psychodrama** will be held jointly with the Moreno Institute in New York City on March 24-26, 1961. For program and reservations, write to: P. O. Box 311; Beacon, New York.

A training course on **PERT (Program Evaluation and Review Technique—**a computerized management system) will start on April 3, 1961 at the Institute for Management Dynamics (225 Santa Monica Boulevard; Santa Monica, California).

The Second National Symposium on **Human Factors in Electronics** will be held on May 4-5, 1961 in Arlington, Virginia, sponsored by the Professional Group on Human Factors in Electronics of the Institute of Radio Engineers. Papers are invited on the four session topics: Man-Computer Relationships, Human Factors in Air Traffic Systems, Information and Communication in Electronic System Maintenance, and Human Factors in Ship Navigation and Communication. Abstracts of 500 words should be sent to the Program Chairman: Ezra Krendel, Manager; Engineering Psychology Laboratory, Franklin Institute Laboratories; Philadelphia, Pennsylvania.

The eleventh annual **Institute for Training Specialists** on June 5-9, 1961 sponsored by Cornell's New York State School of Industrial and Labor Relations will be concerned with training problems confronting business and industry in the

face of continuing technological change and the resulting change in organizational learning needs.

The Department of Psychology at the University of Chicago announces that S. J. Beck will conduct two **Rorschach workshops**, June 19-23, 26-30, 1961. For further information, write to: Rorschach Workshops; Department of Psychology, University of Chicago; Chicago 37, Illinois.

The Survey Research Center of the University of Michigan will hold its fourteenth annual summer institute on **Survey Research Techniques** on July 24-August 19, 1961. For further information, write to: SRC, University of Michigan; Ann Arbor, Michigan.

The eighth Annual International Meeting of the **Institute of Management Sciences** will be held in Brussels, Belgium, on August 23-26, 1961. Par-

ticipants who want to contribute a paper are required to submit either the paper or an adequate abstract to the Program Chairman: William W. Cooper; Graduate School of Industrial Administration, Carnegie Institute of Technology; Pittsburgh 13, Pennsylvania.

The 1961 Annual Meeting of the **National Council on Family Relations** will be held on August 23-25 at the University of Utah. For further information, write to: Ruth Jewson, Executive Secretary; NCFR; 1219 University Avenue, S.E.; Minneapolis 14, Minnesota.

The **Society for Clinical and Experimental Hypnosis** will hold its Annual Meeting on October 5-6, 1961 in Cleveland, Ohio. For further information, write to: Dezso Levendula; 10900 Carnegie Avenue; Cleveland 6, Ohio.

---

## Convention Calendar

---

**American Psychological Association:** August 31-September 6, 1961; New York, New York

*For information, write to:*

Janice P. Fish  
American Psychological Association  
1333 Sixteenth Street, N.W.  
Washington 6, D. C.

**Southern Society for Philosophy and Psychology:** March 30-April 1, 1961; Atlanta, Georgia

*For information, write to:*

Dan R. Kenshalo  
Florida State University  
Tallahassee, Florida

**Southwestern Psychological Association:** April 6-8, 1961; Little Rock, Arkansas

*For information, write to:*

Gordon Anderson  
University of Texas  
P. O. Box 8017, University Station  
Austin 12, Texas

**Eastern Psychological Association:** April 7-8, 1961; Philadelphia, Pennsylvania

*For information, write to:*

Carl H. Rush  
P. O. Box 252  
Glenbrook, Connecticut

**Inter-Society Color Council:** April 10-12, 1961; Rochester, New York

*For information, write to:*

Ralph M. Evans, Secretary  
Inter-Society Color Council  
Color Technology Division, Building 65  
Eastman Kodak Company  
Rochester 4, New York

**Southeastern Psychological Association:** April 13-15, 1961; Gatlinburg, Tennessee

*For information, write to:*

Susan W. Gray  
Box 30  
George Peabody College for Teachers  
Nashville 5, Tennessee

**Midwestern Psychological Association:** May 4-6, 1961; Chicago, Illinois

*For information, write to:*

I. E. Farber, Secretary-Treasurer  
Midwestern Psychological Association  
Department of Psychology  
State University of Iowa  
Iowa City, Iowa

**Rocky Mountain Psychological Association:** May 11-13, 1961; Albuquerque, New Mexico

*For information, write to:*

Wilbur C. Miller  
Department of Psychology  
University of Denver  
Denver 10, Colorado

**Western Psychological Association:** June 15-17, 1961; Seattle, Washington

*For information, write to:*

George Horton  
Department of Psychology  
University of Washington  
Seattle 5, Washington

**World Federation for Mental Health:** August 30-September 6, 1961; Paris, France

*For information, write to:*

Secretary-General  
World Federation for Mental Health  
19 Manchester Street  
London, W.1, England

## CONVENTION ANNOUNCEMENTS

### SIXTY-NINTH ANNUAL CONVENTION OF THE AMERICAN PSYCHOLOGICAL ASSOCIATION

GEORGE S. SPEER

*Convention Manager*

AND

CHARLES COFER

*Associate Convention Manager*

**Time and Place:** Thursday, August 31, through Wednesday, September 6, 1961 in New York City. New York City is on Eastern Daylight Saving Time. All meetings and all official APA functions will be held in the three Headquarters Hotels: the Biltmore, Commodore, and Roosevelt. The APA Day Program will be held in the Commodore.

**Housing:** In cooperation with APA, substantial blocks of rooms have been set aside at guaranteed rates at all three of the Headquarters Hotels. *Members should note, however, that these rates are guaranteed at the rates requested only if the Advanced Registration Form is returned prior to August 1, 1961.* After August 1, every effort will be made to assign rooms at the guaranteed rate, but such assignments cannot be guaranteed, and it is quite unlikely that late requests can be honored. Reservations received *after* August 1 would be most likely assigned at the regular hotel rates, which are considerably higher than the flat rates arranged for our convention. The Advanced Registration Form (which includes space for hotel reservations) appears at the end of these announcements. Members and guests with special housing needs should write directly to the Housing Committee Chairman: Richard T. Zegers; Department of Psychology, Fordham University; New York 58, New York.

**Registration:** Members and guests are urged to register in advance to minimize delay upon arrival at the meetings, as well as to ensure guarantee of hotel space at desirable rates. Attention is called to an innovation in this year's registration procedure. This year the convention badge, with name and institutional affiliation, will be mailed in advance of the convention to those who preregister. Advanced registrants will need only to put their local convention address on a coupon and hand this to the convention clerks to complete their registration, thus almost completely avoiding any possible delays.

Complete member and nonmember registration facilities will be maintained in all three Headquarters Hotels: West Ballroom Foyer, Commodore; Bowman Room Foyer, North Corridor, Biltmore; Oval Room, Roosevelt. There is no fee for APA members, foreign affiliates, members of Psi Chi, members of the Student

Journal Group, or nonmembers who are participants in the official program; the fee for other nonmembers is \$3.00.

The Registration Desks in all three hotels will be open on Wednesday, August 30, from 2:00 P.M. to 8:00 P.M. During the meetings the Registration Desks will be open from 8:00 A.M. to 5:00 P.M., except for APA Day, Sunday, September 3, and on Wednesday, September 6, on both of which days the desks will close at 12:00 noon.

**Directory:** A directory of members and guests registered at the convention will be maintained in the Registration Areas in each hotel: West Ballroom Foyer, Ballroom Floor, Commodore; Bowman Room Foyer, North Corridor, Lobby Floor, Biltmore; and Oval Room, First Floor, Roosevelt. New directory listings will be posted twice daily.

**Mail and Directory Correction:** A message bulletin board and mailbox for leaving messages for members and guests at the convention will be available in the Registration Area in the Commodore. There will also be a Directory Correction Desk in this area. Members and guests who notice errors in the directory listing are urged to complete a correction form and to have their listing revised. However, members and guests are cautioned that corrections will be made only in the spelling of the name, and in their local convention address. Directory of members and guests at the convention will be maintained in the Registration Area in all three of the Headquarters Hotels.

**Tickets for Luncheons, Dinners, and Other Special Events:** It will be necessary to purchase tickets for all scheduled meal functions and other ticketed special events in advance of the function. Tickets will be sold only at the Special Events Desk in the Registration Area on the Ballroom Floor of the Commodore. Luncheon tickets must be purchased before 10:00 A.M. and dinner tickets before 3:00 P.M. on the day for which the event is scheduled.

**Additional Luncheon and Dinner Requests:** Arrangements for food or beverage functions for special groups, APA divisions, alumni parties, special interest groups, etc. may still be made. After April 15 (see "Call for



Papers and Symposia" in the December 1960 *American Psychologist*), requests should be sent to the Associate Convention Manager as soon as possible. Functions scheduled before July 15 will be announced in the *Convention Guide*.

**Women's Activities:** Arrangements have been made for a Distaff Center in the Neptune Suite on the First Floor of the Biltmore. This center will be open only to women from 9:00 A.M. to 5:00 P.M. (except APA Day). Coffee will be served with the compliments of the Women's Activities Committee.

**APA Reception for Psychologists' Wives and Guests:** On Monday, September 4, in the Bowman Room of the Biltmore from 4:30 to 6:00 P.M., the Women's Activities Committee will hold a reception in honor of the wives of the APA officers, the directors, and the distinguished guests. Although this reception has been planned primarily for women in psychology, the committee extends a cordial invitation to all who are interested in attending.

**APA Dance:** The APA Dance will be held on Saturday, September 2, in the Grand Ballroom of the Commodore from 9:00 P.M. to 1:00 A.M. There is no admission charge for this event. Provision will be made for the purchase of beverages.

**Exhibits:** This year a very interesting array of educational, informative, and entertaining exhibits has been planned in two exhibit centers. Exhibits will be on the Ballroom Floor of the Commodore and on the Ballroom Floor (Floor 19) of the Biltmore. Members are urged to visit these unusual displays.

**Convention Lounge:** The Ridibunda Lounge, open to all members and guests, will be located in the Madison Room on the Lobby Floor of the Biltmore. The lounge and bar facilities will be open at 4:00 P.M. daily. Social hours for many divisions and other groups will be scheduled in the Ridibunda Lounge.

**Placement:** The Placement Office will be located in the Ballroom, Obelisk, and Fountain Rooms (Floor 19) in the Biltmore. The Placement Office will be open Wednesday, August 30, from 2:00 P.M. to 8:00 P.M., and daily (except APA Day when the office will be closed) from 9:00 A.M. to 5:00 P.M. Applicants and employers are urged to preregister with the Placement Office. Applicants seeking employment may preregister by completing the Applicant Form which appears at the end of these announcements. Employers having position openings may preregister by completing the Position Description Form which also appears at the end of these announcements. A special publication, the *Convention Placement Bulletin*, which will include all preregistered applicants and position openings, will be

available for sale at the Placement Office at \$1.00 per copy.

**Convention Treasurer:** The Convention Treasurer urges division officers to check their financial commitments with the hotels very closely to avoid confusion with those commitments assumed by the APA Central Office or by the Convention Arrangements Committee. In general, divisions are urged to check with the Convention Manager or the Associate Convention Manager before making any commitments which involve financial responsibility.

**Audio-Visual Aids:** All persons who are planning to use slides, films, or other audio-visual aids should re-read with care Section VI of the "Call for Papers and Symposia" in the December 1960 issue of the *American Psychologist*. Projection cannot be assured for those who have not complied with the procedures outlined in the call, but may be possible through prompt communication with: Bernard Locke; Psychology Department, Veterans Administration Hospital; New York 10, New York.

**Volunteer Workers.** At each convention, there is need for volunteer workers to supplement the various committees and to assist in staffing desks, offices, etc. Most of the work during the convention proper (as opposed to the long hours of detailed committee planning) is done by members and students who have volunteered their services. This year's Volunteer Workers Committee would appreciate offers to work or to recruit students who will work. If you will have some free time during the convention and would like to help, please fill out the Call for Volunteers Form at the end of these announcements and return it to the Chairman of the committee: Bernard N. Kalinkowitz; New York University; 21 Washington Place; New York 3, New York.

**Convention Personnel:** A convention of this size requires the efforts of many people for many hours far in advance, during the convention, and for some considerable time later. Each person assumes responsibility for one aspect of the convention; all work together cooperatively to provide you with a pleasant and smoothly operating convention. You may wish to contact one or more of these people before or during the convention.

Convention Manager: George S. Speer, *Illinois Institute of Technology, Chicago*

Associate Convention Manager: Charles Cofer, *New York University*

Convention Program Committee: Alexander Wesman, *Psychological Corporation*

Convention Treasurer: Raymond Katzell, *New York University*

Audio-Visual Aids: Bernard Locke, *Veterans Administration Hospital, Manhattan*  
 Convention Guidebook: Scarvia Anderson, *Educational Testing Service, Princeton*  
 Directory and Mail: Alice Gustav and Margaret Tresselt, *New York University*  
 Exhibits: Elliott Schuman, *Long Island University*  
 Housing: Richard T. Zegers, *Fordham University*  
 Information Desk: Herman R. Weiss, *Mental Hygiene Clinic, Veterans Administration Regional Office, New York City*  
 Meeting Rooms: Thomas B. Sprecher, *Engineering Research Center, Western Electric Company, P. O. Box 900, Princeton, New Jersey*  
 Membership Survey: Herbert Abelson, *Opinion Research Corporation*  
 Placement Liaison: Mildred Katzell, *National League for Nursing*; and Janice P. Fish, *APA Central Office, Washington*  
 Public Relations: Harry Sands, *United Epilepsy Association*; and Michael Amrine, *APA Central Office, Washington*  
 Registration: Walter H. Wilke, *New York University*  
 Signs and Posters: Robert S. Morrow, *Veterans Administration Hospital, Bronx*  
 Special Events: Fabian Rouke, *Manhattan College*; and Virginia Staudt, *Hunter College*  
 Volunteer Workers: Bernard Kalinkowitz, *New York University*  
 Women's Activities: Dorothy C. Krugman, *425 Riverside Drive, New York City*

**Location of Headquarters Rooms:** Following is a list of room locations for convention activities and convention personnel in addition to the activity locations listed above in these announcements.

APA Board of Directors: *Club Suite, Commodore*  
 APA Central Office: *Club Suite, Commodore*  
 APA Convention Offices: *Parlor D, Commodore; Roosevelt, Roosevelt; Room 127, Biltmore*  
 Distaff Center: *Neptune Suite, Biltmore*  
 Film Presentations: *Music Room, Biltmore*  
 Physical Facilities (Audio-Visual Aids, Meeting Rooms, Signs and Posters): *Parlor G, Commodore*  
 Public Relations and Press: *Rooms 103 and 105, Commodore*  
 Volunteer Workers: *Parlors E and F, Commodore*

**Location of Function Rooms:** *Note frequent duplication of names.*

#### BILTMORE

Nineteenth Floor: Ballroom, Key, Fountain, Obelisk  
 First Floor: Music, Vanderbilt, Biltmore, French, Neptune and Emerald Suites  
 Lobby Floor: Library, Bowman, Madison

#### COMMODORE

Ballroom Floor: Grand Ballroom, East Ballroom, West Ballroom, Parlors A, B, C, D, E, F, and G  
 Third Floor: East and West Club Suites  
 Lobby Floor: Windsor Ballroom, Terrace Ballroom, Court Ballroom

#### ROOSEVELT

Lobby Floor: Terrace, Oval, Roosevelt  
 Mezzanine: Grand Ballroom, Madison, Library, Parlors A, B, C, D, E, and F  
 Second Floor: Stuyvesant, East, Vanderbilt

**ADVANCED REGISTRATION FORM**  
**SIXTY-NINTH ANNUAL CONVENTION OF THE AMERICAN PSYCHOLOGICAL ASSOCIATION**

New York City, August 31-September 6, 1961

Type or print the information requested, putting only one letter on each short line.

Circle One: Prof. \_\_\_\_\_  
Dr. \_\_\_\_\_  
Mr. \_\_\_\_\_ Name: \_\_\_\_\_  
Mrs. \_\_\_\_\_ First Name \_\_\_\_\_  
Miss \_\_\_\_\_ or Initials \_\_\_\_\_ Last Name only \_\_\_\_\_

Professional Affiliation:

(to appear on badge—print  
only one letter on each short  
line. Leave an empty short  
line between each word.)

MAILING ADDRESS: Address to which hotel confirmation and convention badge are to be sent.

(Street Address)

(City)

(Zone)

(State)

**CONVENTION DIRECTORY INFORMATION**

This information is requested for the Convention Directory and will be posted during the convention:

Expected date of arrival: \_\_\_\_\_ Date of departure: \_\_\_\_\_

APA membership status: No registration fee is required for those in this group.

Fellow \_\_\_\_\_ Member \_\_\_\_\_ Associate \_\_\_\_\_  
Member, Student Journal Group \_\_\_\_\_ Foreign Affiliate \_\_\_\_\_ Member, Psi Chi \_\_\_\_\_

Indicate Division memberships by number(s) \_\_\_\_\_

Nonmember \_\_\_\_\_ REGISTRATION FROM NONMEMBERS MUST BE ACCOMPANIED BY A REGISTRATION FEE OF \$3.00.

PLEASE MAKE CHECKS PAYABLE TO: APA CONVENTION AFFAIRS BOARD

Members and nonmembers may complete their registration at the Biltmore, Commodore, or Roosevelt Hotels. Complete registration facilities will be maintained at each hotel throughout the convention.

**HOTEL INFORMATION**

\_\_\_\_\_ I do not want a hotel reservation

The following rates will apply in all three Headquarter Hotels. Please indicate your hotel preference, and the type of accommodation desired:

\_\_\_\_\_ Biltmore \_\_\_\_\_ Commodore \_\_\_\_\_ Roosevelt  
\_\_\_\_\_ Single bedrooms: \$10.00 \_\_\_\_\_ Double bedrooms: \$16.00 \_\_\_\_\_ Twin bedrooms: \$16.00  
\_\_\_\_\_ Dormitory rooms at \$3.50 per person, four or more in a room. This rate applies only for at least four or more in a room.  
Please list names below:

List names for those to occupy dormitory rooms: (Be sure to give the names of all occupants)

Name (Please print)	Sex	Address	City	State
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____
_____	_____	_____	_____	_____

Reservations will not be held beyond 6:00 P.M. except by request.

NOTE: THESE RATES ARE GUARANTEED AT THE RATE REQUESTED ONLY IF THE REGISTRATION BLANK IS RETURNED PRIOR TO AUGUST 1, 1961. AFTER AUGUST 1 EVERY EFFORT WILL BE MADE TO ASSIGN ROOMS AT THESE RATES, BUT SUCH ASSIGNMENT IS UNLIKELY AND CANNOT BE GUARANTEED.

MEMBERS ARE URGED TO RETURN THIS FORM PROMPTLY, AND IN ANY EVENT PRIOR TO AUGUST 1, IN ORDER TO BE SURE OF RECEIVING THE ACCOMMODATIONS DESIRED.

Your hotel reservation will be confirmed and will be mailed to you with your convention badge. Please be sure the mailing address above is correct.

Please return this form as early as possible to:

APA Housing Bureau, Pershing Square, 90 East 42 Street, New York 17, New York

(Copies of this form may be obtained from the APA Central Office)

Advanced Registration Forms received after August 1 may not be processed for preregistration



**CALIFORNIA CALLING**

**clinical psychologists**

*Nationwide Interviews  
April 6 to May 6, 1961*

*including*

*Eastern Psychological Association  
Convention*

*Philadelphia, April 6, 7*

*Midwestern Psychological Association  
Convention*

*Chicago, May 4, 5, 6*

California's expanding mental health and correctional rehabilitation programs offer the clinical psychologist professionally broadening opportunities. These are long range projects planned to meet the needs of the nation's fastest growing state. Facilities located throughout California provide a choice of both geographical environment and type of practice. Immediate openings.

Starting salaries from \$5,496 to \$8,520. Promotion by merit program. Liberal employee benefits. A Ph.D. in Clinical Psychology or its equivalent is required.

Inquiries will be welcomed. Write: Medical Personnel Services  
State Personnel Board, 801 Capitol Avenue, Sacramento 14, California

### **STUDYING PERSONALITY CROSS-CULTURALLY**

**Bert Kaplan, University of Kansas, Editor.** Thirty eminent scholars from anthropology, sociology, psychology, psychiatry, and history produce an interdisciplinary text for culture and personality courses. Contains historical and theoretical chapters, and case histories. 687 pp. \$8.50

### **VARIATIONS IN VALUE ORIENTATIONS**

**Florence Rockwood Kluckhohn, Harvard University and Fred L. Strodbeck, University of Chicago.** An important theoretical contribution to the theory of value systems. The concepts of conformity, deviation, and cultural change are presented in a new light. To be published in May. About 448 pp. \$7.75

### **GROUP DYNAMICS: Research and Theory**

**Dorwin Cartwright and Alvin Zander, Research Center for Group Dynamics, University of Michigan, Editors.** The second edition of this successful text for courses in group dynamics is one hundred pages longer than the first edition. Twenty-three chapters are new, and nineteen have been retained. 832 pp. \$7.25

### **PATTERNS OF CHILD REARING**

**Robert R. Sears, Eleanor E. Maccoby, Stanford University; and Harry Levin, Cornell University.** A research report on actual child-rearing practices which has been widely adopted as a text for courses in child development, parent-child relationships, the preschool child, and child psychology. 549 pp. \$5.25

Examination copies available to teachers of the appropriate courses

### **ROW, PETERSON AND COMPANY**

Publishers of Good Books in Evanston, Illinois, and Elmsford, New York



# **APPLICANT FORM**

(Typewrite or print in pencil)    **APA CONVENTION PLACEMENT OFFICE**    **Applicant Number**.....

**Name:** ..... **Sex:** .....

**Convention address:** ..... **Phone:** .....

**Permanent address:** .....

**APA membership:** Yes ..... No .....

<b>Academic Training:</b> Degree .....	University .....	Year .....
Describe pertinent work history:		
Number of papers presented or published:		

**Type of position desired:** .....

**Expected salary (optional):** ..... **Preferred location:** .....

Give a tentative schedule of the time you plan to be available in the Convention Placement Office for interviews:

Aug. 31		Sept. 1		Sept. 2		Sept. 4		Sept. 5		Sept. 6	
A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.

Under which field of specialization do you wish your application to be filed?    Check no more than two boxes:

	Clinical
	Counseling
	Educational
	School

	Developmental
	Experimental
	General
	Physiological

	Human Engineering
	Industrial
	Personality
	Social

**(Return completed form to:**    Convention Placement; 1333 Sixteenth Street, N.W.; Washington 6, D. C.  
 Copies of this form are available from this address.)

---

## PSYCHOLOGICAL MONOGRAPHS

### VOLUME 73 (1959)

- No. 483. **Personality, Intellectual, and Achievement Patterns in Gifted Children**, by ADMA D'HEURLE, JEANNE C. MELLINGER, and ERNEST A. HAGGARD  
*Price \$1.00*
- No. 484. **Impaired Performance with Acute Sleep Loss**, by HAROLD L. WILLIAMS, ARDIE LUBIN, and JACQUELINE J. GOODNOW  
*Price \$1.00*
- No. 485. **Personality and Environmental Factors in the Development of Delinquency**, by ROBERT D. WIRT and PETER F. BRIGGS  
*Price \$1.50*
- No. 486. **Imitative Behavior in Preschool Children**, by JOHN W. McDAVID  
*Price \$1.00*
- No. 487. **The Validity of the Thematic Apperception Test in the Study of Adolescent Personality**, by WILLIAM E. HENRY and JANE FARLEY  
*Price \$1.50*

### VOLUME 74 (1960)

- No. 488. **Anoxia, Behavioral Development, and Learning Ability: A Comparative-Experimental Approach**, by GILBERT W. MEIER, MARION E. BUNCH, CARSON Y. NOLAN, and CHARLES H. SCHEIDLER  
*Price \$1.50*
- No. 489. **Similarities in the Structure of Extreme Social Attitudes**, by IRVING A. TAYLOR  
*Price \$1.50*
- No. 490. **Perceptual Conditions of Association**, by SOLOMON E. ASCH, JOHN CERASO, and WALTER HEIMER  
*Price \$1.50*
- No. 491. **Meaning and Familiarity in Associative Learning**, by WILLIAM EPSTEIN, IRVIN ROCK, and CARL B. ZUCKERMAN  
*Price \$1.00*
- No. 492. **Relative Effectiveness of Psychotherapeutic Programs: A Multicriteria Comparison of Four Programs for Three Different Patient Groups**, by G. W. FAIRWEATHER, R. SIMON, M. E. GEBHARD, E. WEINGARTEN, J. L. HOLLAND, R. SANDERS, G. B. STONE, and J. E. REAHL  
*Price \$1.00*

Order from:

**AMERICAN PSYCHOLOGICAL ASSOCIATION** \_\_\_\_\_

**Order Department, 1960**

**1333 16th Street, N.W.**

**Washington 6, D. C.**

# **POSITION DESCRIPTION FORM**

(Typewrite or print in pencil)      **APA CONVENTION PLACEMENT OFFICE**      **Position Number**.....

I. Name and Address of Employing Organization: .....

II. Position Title (include location if different from I.): .....

III. How many openings does this form cover: .....

IV. Applicant Requirements:

A. Degree:	1. PhD (EdD) .....	2. PhD preferred, will consider Master's .....	
	3. Master's .....	4. Other.....	
B. Experience:			
C. Other:			
Sex: Male ..... Female ..... Either .....			

V. Position requirements:

A. Duties:	
B. Starting Salary (depending on qualifications):	Minimum ..... Maximum .....
C. Position Begins: Immediately ..... or, give date .....	

VI. A. If you wish space to interview applicants, fill in the name of the interviewer and check your tentative interviewing schedule: .....

Aug. 31		Sept. 1		Sept. 2		Sept. 4		Sept. 5		Sept. 6	
A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.	A.M.	P.M.

B. If you have no plans for interviewing, please indicate the person to whom inquiries are to be sent: .....

VII. Check one category for listing your position:

Academic ..... Clinical and Counseling ..... Industrial and Research .....

(Return completed form to: Convention Placement; 1333 Sixteenth Street, N.W.; Washington 6, D. C. Copies of this form are available from this address.)

# **GRADUATE EDUCATION IN PSYCHOLOGY**

Report of the Conference on Graduate Education in Psychology, sponsored by the Education and Training Board of the American Psychological Association and supported by a grant from the National Institute of Mental Health, U. S. Public Health Service; held at Miami Beach, Florida, November 29 to December 7, 1958

Prepared by the Editorial Committee:

Anne Roe, *Chairman*,  
and

John W. Gustad, Bruce V. Moore,  
Sherman Ross, and Marie Skodak

Price \$1.50

**THE AMERICAN PSYCHOLOGICAL ASSOCIATION**  
**Dept. Grad**  
**1333 Sixteenth Street, N.W.**  
**Washington 6, D. C.**



## CALL FOR VOLUNTEERS

### ANNUAL CONVENTION: AMERICAN PSYCHOLOGICAL ASSOCIATION

New York City, August 31-September 6, 1961

It takes people—preferably people with psychological background—to run a convention. Would you be willing to help? If you are planning to come to the convention and can devote at least two periods (mornings, afternoons, evenings) to one of the many jobs that must be filled to run a smooth convention, would you please indicate the periods you would be available. If you are not an APA member or in the Student Journal Group or Psi Chi, the \$3.00 Registration Fee for nonmembers will be waived, as a small token of our appreciation. At the convention you will receive a program guide, and your lapel badge will admit you to all sessions.

1. I volunteer for a maximum of \_\_\_\_\_ periods from the ones indicated below.

2. Place the number **1** in each of your two (or more) first-choice times, the number **2** in each of your second-choice times, and the number **3** in each third-choice time. If you are concerned about avoiding time conflicts with programs of interest, consult the convention schedule in the December *American Psychologist* or the official program in the July *American Psychologist*.

	Wed. Aug. 30 Pre- convention	Thurs. Aug. 31	Fri. Sept. 1	Sat. Sept. 2	Sun. Sept. 3	Mon. Sept. 4 Labor Day	Tues. Sept. 5	Wed. Sept. 6
8:45-12:45								
12:45- 4:45								
4:45- 8:15								

Note: There *will* be mealtime breaks for those who serve successive periods on the same day.

3. If you volunteered for a morning session, could you begin at 8:15 A.M. if necessary? Yes ☐ No ☐

4. Check the services you offer:

\_\_\_\_\_ General (clerical, filing, information desk, etc.)

\_\_\_\_\_ Typing (Fair \_\_\_\_\_ Good \_\_\_\_\_)

Name: \_\_\_\_\_ Phone No.: \_\_\_\_\_ Date: \_\_\_\_\_

Mail Address: \_\_\_\_\_ City: \_\_\_\_\_ Zone: \_\_\_\_\_ State: \_\_\_\_\_  
(on August 20)

School (if a student now) \_\_\_\_\_ VA trainee \_\_\_\_\_

VA installation \_\_\_\_\_

Position (if *not* a student): \_\_\_\_\_ Organization: \_\_\_\_\_

5. Please detach and mail top-part to: Bernard N. Kalinkowitz; New York University; 21 Washington Place; New York 3, New York.

6. Unless you hear otherwise from us, please come to the Volunteer Workers Desk at your earliest first-choice time (Commodore Hotel, Ballroom Floor, Parlor E); if possible, come in earlier and get acquainted. *If a change occurs in your address or availability, please write to Kalinkowitz (at the above address). Fill out, detach, and save this duplicate slip.*

	Wed. Aug. 30 Pre- convention	Thurs. Aug. 31	Fri. Sept. 1	Sat. Sept. 2	Sun. Sept. 3	Mon. Sept. 4 Labor Day	Tues. Sept. 5	Wed. Sept. 6
8:45-12:45								
12:45- 4:45								
4:45- 8:15								

## *For beginning students . . .*

### **Contemporary Readings In General Psychology**

Edited by Robert S. Daniel

"This is an excellent reading source. It differs from other 'readings' in that the source material is of a sort that would appeal to and recruit serious students of psychology."

—MORTON RABIN  
Mississippi Southern College

"One of the most interesting and stimulating books of its kind that I have seen for a long time. There is a wealth of material which is both readable and provocative of thought, a combination not easily achieved."

—JOHN NUTTALL  
University of British Columbia

"I am impressed with its breadth and practical features—nothing stodgy about these readings—fine sweep."

—JAMES TANNER  
Denison University

385 pages

1959

Paper Covers

\$3.25

### **The Psychology of Adjustment**

#### **A Dynamic and Experimental Approach to Personality and Mental Hygiene Second Edition**

By Laurance F. Shaffer and Edward Joseph Shoben, Jr.

"Written to help the beginning student to 'understand and know, rather than to practice and apply,' it carefully avoids inspirational or frightening exhortations to self help and cautions that behavior is too complex to be understood without assiduous scientific study. It is the change in the character and scope of psychological knowledge that the book purports to reflect and, in the framework of its particular systematic orientation to adjustment, it reflects this change exceedingly well. The new text is better than the original not only because it has more germane and dependable experimental, sociological, and clinical evidence to work with, but also because it has committed itself to greater compass and penetration in discussing the dynamics of human adjustment. Its metamorphosis makes it one of the most conceptually solid texts to appear to date."

—BERNARD SAPER, of Northwestern University,  
in *Contemporary Psychology*

672 pages

1956

\$6.50

An Instructor's Handbook of Objective Test Items is available without charge to teachers who adopt the text.



# *Houghton Mifflin Company*

BOSTON · NEW YORK · ATLANTA · GENEVA, ILL. · DALLAS · PALO ALTO

**Announcing . . .**

the **4th** edition of

## **PSYCHOLOGY: The Fundamentals of Human Adjustment**

**By Norman L. Munn**

832 pages    Illustrated    7 by 9½ inches    February 1961

Completely revised and expanded, the better to interpret the complex strands that make up present-day psychology, this new edition of Dr. Munn's widely adopted beginning text combines an attractive new format, a literary style, and factual soundness.

The twenty-five chapters of this edition (as compared with sixteen in the third edition) are organized into six parts, each reflecting an important current focus of study. The Glossary, a section of the Appendix, provides the beginning student with building blocks of modern scientific psychology—concise, accurate definitions of terms. More than 400 charts, photographs, and line drawings, most of which are new, illustrate the book, and a second color is used *functionally* throughout.

**to accompany PSYCHOLOGY, 4th edition . . .  
STUDENT'S MANUAL**

128 pages    Paper Covers    8½ by 11 inches    February 1961

This new manual, prepared by the author, makes the student self-sufficient so far as experiments, demonstrations, and self-testing exercises are concerned. No special apparatus is needed for the experiments, and a key for the self-testing exercises is included.

### **INSTRUCTOR'S MANUAL**

To be available without charge to teachers adopting the text for class-room use, this manual contains approximately fifty objective test items and their answers for each chapter of the text.



**Houghton Mifflin Company**

BOSTON · NEW YORK · ATLANTA · GENEVA, ILL. · DALLAS · PALO ALTO

# PSYCHOLOGY

---

by CALVIN, GALLAGHER, HANLEY,  
McCONNELL, McGUIGAN, and SCRIVEN

This new volume brings together the writings of a highly select group of specialists. It is carefully coordinated into a cohesive whole by Dr. Allen Calvin, in order to maintain a consistency of style and content throughout. The direct, clear presentation makes difficult subject matter understandable to undergraduate students.

The Learning section is treated in terms of a modern, stimulus-response approach, and reflects the most recent research in the Hullian approach to Learning. The Perceptual material is integrated within the framework of a neurohebbian model. In Growth and Development, specific children are followed from early life in order to show influences on later behavior.

Also presented are numerous case histories, records of group psychotherapeutic sessions, and a realistic appraisal of professional opportunities in Psychology today. An Instructor's Manual, containing an extensive library of test questions, will be available upon adoption.

# STUDENT WORKBOOK TO ACCOMPANY PSYCHOLOGY

---

by PAUL J. WOODS

A study guide concerned entirely with helping the student to learn and understand, this workbook can be used in conjunction with the text or independently. Each chapter has two sections; (1) a thorough and complete open-ended outline of the text to be filled in by the student, and (2) a self-test section consisting of multiple-choice questions, which functions as a private tutor. The answer section provides not only the correct answer, but also detailed explanations as to why the alternatives are wrong, and text page references, indicating where the answers and explanations can be found.



for further information write to: Arthur B. Conant

**ALLYN AND BACON COLLEGE DIVISION**  
**150 Tremont Street, Boston 11, Mass.**



## FROM THE CENTURY PSYCHOLOGY SERIES

*New—Second Edition of Hilgard and Marquis'*

### Conditioning and Learning

Revised by GREGORY A. KIMBLE, *Duke University*

Retaining the viewpoint of the original text, this Second Edition is composed almost entirely of new material based upon the developments of the past twenty years in the field of conditioning and learning. The book employs a factual, historical, and non-theoretical approach to place the facts and alternative conceptions of the nature of learning in an organized pattern. A bibliography of 1500 items is included. *Just published, 590 pp., illus.*

### Using Tests in Counseling

By LEO GOLDMAN, *Brooklyn College*

Assuming a knowledge of elementary statistics and the basic principles of tests and measurements, this new text is devoted entirely to the use of tests in counseling. The book discusses the counselor's selections of tests, the psychology of test-taking, the interpretation of test results, and the communication of the results to counselees and other interested persons. Ample illustrative material is included. *Ready in April, 480 pp., illus.*

### Studies in Individual Differences:

#### The Search for Intelligence

Edited by JAMES J. JENKINS and DONALD G. PATERSON,  
both of the *University of Minnesota*

This book of readings, chronologically arranged, illustrates the history of research on intelligence from its beginnings in the work of Sir Francis Galton to the present. Sixty-six articles, representative of the chief contributions to the field, show the growth of the necessary methodologies for research and sample the development of theoretical views. The interplay between problems and methodologies is clearly demonstrated.

*Ready in April, 768 pp., illus.*

### Educational Psychology

By GEORGE G. THOMPSON, ERIC F. GARDNER, and  
FRANCIS J. DIVESTA; all of *Syracuse University*

In this successful basic text, the principles of psychology are applied to modern educational problems and emphasize group therapy, dynamics, and personality adjustment of the school child. The book discusses both modern and traditional principles of learning and correlates them with numerous applications to classroom usage. *535 pp., illus., \$6.00*

*Student Workbook for Educational Psychology 138 pp., paper, \$1.90*



APPLETON-CENTURY-CROFTS, INC.

35 West 32nd Street

New York 1, New York

---

*the role of*  
**HUMAN FACTORS SCIENTISTS**  
*in systems that help men make decisions and exert control*

---

Your role is that of analyst and planner—and catalyst. System Development Corporation is engaged in developing systems to help military commanders make decisions and exert control on a continental and world-wide scale. As a Human Factors Scientist at SDC you would be involved in the development of techniques and methods for optimizing man's role in these systems, and in the analysis and planning of organizational patterns. ■ To staff our expanding programs, we are looking for scientists in behavioral fields to: 1—analyze activities and socio-cultural environment of large organizations 2—analyze systems behavior 3—study how men, machines and activities can be organized into the most effective patterns 4—analyze the impact of automation on individual and organizational behavior. ■ The systems approach at SDC is interdisciplinary. You would work closely with Operations Research Scientists, System Engineers and Computer Programmers. Your concern would be the development of the system, not the hardware. ■ **PERTINENT FACTS:** You would be joining one of the largest staffs of behavioral scientists in this country. ■ You would receive a flexible orientation program to adapt your abilities and experience to system development. ■ In the future, SDC's systems may well include fields such as world-wide communications, traffic, logistics, education, medicine, as well as military projects. ■ If you wish to explore your participation in this new technology, you are invited to write R. G. Burke at 2420 Colorado Avenue, Santa Monica, California.

---

Santa Monica, California ■ Paramus, New Jersey



**SYSTEM DEVELOPMENT CORPORATION**

---



**BOOKS**

**READY SOON**

*the new Second Edition of the widely used . . .*

## **MEASUREMENT and EVALUATION in PSYCHOLOGY and EDUCATION**

**By ROBERT L. THORNDIKE, and ELIZABETH HAGEN,**  
*both of Teachers College, Columbia University*

Developed in a course at Teachers College, Columbia University, this book provides an effective introduction to the concepts that underlie tests and testing. It also offers a practical guide to their application in school, counseling, or personnel work. The authors stress the objectives of testing rather than its mechanics, and their treatment is based on a careful analysis of the underlying logical and methodological issues.

In addition to outlining the central role of identifying and defining objectives in the construction and evaluation of tests, the book also offers a guide to the location of specific tests and provides information on both tests and testing problems. Using specific tests as illustrations, it gives a critical appraisal of the major methods of evaluating intelligence, aptitudes, achievements, and personality.

### **SPECIAL FEATURES OF THE NEW EDITION . . .**

- The discussion on defining objectives and planning tests has been considerably expanded and the procedures for developing a test blueprint have been presented in greater detail.
- More specific guide lines offered for preparing essay test questions.
- Guides and maxims for preparing objective test questions are more complete.
- The section on validity has been completely rewritten (i.e. validity is discussed under three main headings: (1) validity as *representing*, (2) validity as *predicting*, and (3) validity as *describing*).
- The chapter on aptitude testing has been extensively rewritten to include new information on the validity of aptitude test batteries.
- The chapter on school testing programs has been extensively rewritten. Additional consideration has been given to handling the practical mechanics of school testing programs, to testing programs for colleges, and to national testing programs of different kinds.

**1961. In press.**

**JOHN WILEY & SONS, INC.,** 440 Park Avenue South, New York 16, N.Y.

## FROM MACMILLAN . . .

### GIFTED CHILDREN:

Their Psychology and Education

Maurice F. Freehill, *Western Washington  
College of Education*

A major contribution toward the understanding and development of gifted children, this important text furnishes detailed treatment of the psychological and educational principles appropriate to gifted learning. Dr. Freehill examines the nature of giftedness, preparatory to a careful consideration of the peculiar characteristics of gifted learning. The book offers proposals in terms of principles and illustrations, suggestions toward improving what is practiced, and applications for giftedness at many levels and in numerous subject areas. *Just Published*

### AN INTRODUCTION TO EXPERIMENTAL DESIGN

William S. Ray, *The Pennsylvania State University*

Beginning with simple planning problems and a review of elementary statistics, this text proceeds to a more complex statistical approach through an analysis of variability. Stressing designs important in actual practice, the author describes the arithmetic of an analysis, explains its relevance to an experimental situation, and concludes with a presentation of the logic and mechanics of an evaluation.

1960, 254 pages, \$6.50

### LEARNING AND BEHAVIOR

Reed Lawson, *The Ohio State University*

Covering the entire range of learning research, this thoroughly integrated text provides an introduction to the psychology of learning from the viewpoint of experimental, behavioristic psychology. The author analyzes behavior in terms of a stimulus-response-reinforcement model; he then explores and relates the major areas of learning research that have contributed to our knowledge of this model.

1960, 447 pages, \$6.75

*The Macmillan Company*  
60 FIFTH AVENUE, NEW YORK 11, N. Y.

### MEDICAL HISTORICAL STUDIES OF MEDIEVAL JEWISH MEDICAL WORKS

Vol. I

### MAIMONIDES "ON SEXUAL INTERCOURSE"

Fi 'L-Jima

Translated from the Arabic with an  
introduction and commentary

---

Sarton's *Introduction to the History of Science* lists this work as "A good example of the best kind of such books. . . ."

---

Price \$10.00

RAMBASH PUBLISHING Co.

Box 1162 G. P. O.

Brooklyn 1, N. Y.



## Just published

the first comprehensive presentation of the functional approach to perception

# VISUAL SPACE PERCEPTION

By William H. Ittelson, Ph.D.  
Professor of Psychology, Brooklyn College

The book develops a wide-ranging theory, based on the functional (or transactional) definition of perception, and applies it to the problem of visual space perception. Dr. Ittelson shows the ambiguity of visual space cues, and makes clear what the *personal* contribution of the perceiver is. The author uses a quantified approach and points the way to further explicit tests of the position.

Perceptual conflicts are dealt with as a special topic—how they may be treated within the area of perception and what their relevance is to other areas of psychology.

The author's approach links the processes of perception with the broader considerations of personality. Examples are included that show the possibility of applying rigorous experimentation to general clinical problems.

224 pages, 26 figures, references

\$6.00

## New international volume

### Perspectives in Personality Research

Edited by Henry P. David  
and J. C. Brengelmann

The new volume, published under the auspices of the International Union of Scientific Psychology, contains a selection of original articles as well as reviews that assess the status and directions of research. Among the contributors are Henry A. Murray, Daniel R. Miller, Irving E. Alexander, Noël Mailloux, Gerald S. Blum, A. R. Luria, Silvan S. Tomkins, Franz From, Ronald Taft, E. P. Hollander, Renato Tagiuri, Robert B. MacLeod, Richard Meili, Joseph Nuttin.

384 pages, 16 tables,  
9 figures, references

\$7.50

## Three books on the PAT

### The Tomkins-Horn Picture Arrangement Test

By Silvan S. Tomkins and John B. Miner

The so-called manual, containing history and rationale of the PAT, procedure, results, methods of scoring and interpretation, scoring patterns and complete standardization data.

383 pages, \$10.00

### PAT Interpretation: Scope and Technique

By Silvan S. Tomkins and John B. Miner

A detailed interpretation of six PAT records, preceded by *scoring* procedure and technique of interpretation.

192 pages, \$5.50

### The Negro Personality

A Rigorous Investigation of the Effects of Culture

By Bertram P. Karon

The PAT used in research. 192 pages, \$4.50

## ORDER FORM

Please send

.... Visual Space Perception, Ittelson	\$ 6.00
.... Perspectives in Personality Research, David and Brengelmann	7.50
.... The Tomkins-Horn PAT (Manual), Tomkins and Miner	10.00
.... PAT Interpretation, Tomkins and Miner	5.50
.... The Negro Personality, Karon	4.50
.... PAT Booklets—Package of 50	\$15.00
.... PAT Scoring Material—Set of 63 Scoring Cards; 100 Scoring sheets; Board; Punch	\$25.00
.... PAT Profile Charts—Package of 100	\$17.50

Check (M.O.) for ——— enclosed. Postfree. (Add 3% sales tax in NYC)

Name —————

Address —————

IAP3



**SPRINGER Publishing Company, Inc., 44 East 23rd Street, New York 10, N.Y.**

# **ABNORMAL PSYCHOLOGY AND MODERN LIFE**

REVISED EDITION *by James C. Coleman*

Provides a solid orientation in the dynamics of abnormal behavior in our society. A readable and scientifically accurate coverage of the entire range of abnormal reaction patterns, including the settings in which they develop, their prevention and cure. Up-to-date material on psychosomatic illnesses and an eclectic view of the latest thinking on causes and treatment of all types of disorders. Excellent illustrations enhance the discussion.

688 pages

\$7.00 list

**SCOTT, FORESMAN AND COMPANY**

*Chicago Atlanta Dallas Palo Alto Fair Lawn, N. J.*

*Second printing. . . .*

# **RESEARCH IN PSYCHOTHERAPY**

Proceedings of an interdisciplinary conference, Washington, D. C., April 9-12, 1958

ELI A. RUBINSTEIN and MORRIS B. PARLOFF, *Editors*

Continued demand for this provocative report, out of print for the past six months, necessitated a second printing; copies are again available.

---

**Price: \$3.00**

*Order from:*

**AMERICAN PSYCHOLOGICAL ASSOCIATION**

Dept. RP2  
1333 Sixteenth Street, N.W.  
Washington 6, D. C.



The Leader in its field. In its 7th large printing.

# Childhood and Adolescence

A PSYCHOLOGY of the GROWING PERSON

by L. Joseph Stone and Joseph Church  
*both of Vassar College*

FOREWORD by OTTO KLINEBERG, *Columbia University*

1957; xvii + 456 pages; 65 photographs; 6 tables; 4 diagrams; \$5.75 text

## Two new Studies in Psychology

EXISTENTIAL PSYCHOLOGY, *Edited by ROLLO MAY* ..... 95¢  
CREATIVITY, *By EMANUEL F. HAMMER* ..... \$1.25

## Other Studies in Psychology

AUSUBEL  
DRUG ADDICTION ..... 95¢

ALLPORT & GILLESPIE  
YOUTH'S OUTLOOK ON THE FUTURE .. 85¢

ADAMS  
THE ANATOMY OF PERSONALITY ..... 85¢

BERNSTEIN  
ON THE NATURE OF PSYCHOTHERAPY 85¢

BISCHOF  
INTELLIGENCE: *Statistical Concepts* ..... 85¢

CANTRIL & ITTELSON  
PERCEPTION: *A Transactional Approach* ..... 85¢

ENGLISH  
The HISTORICAL ROOTS of Learning Theory 95¢

FRANK  
FEELINGS AND EMOTIONS ..... 85¢

FROMM AND HARTMAN  
INTELLIGENCE. *A Dynamic Approach* ..... 85¢

FULLER  
NATURE AND NURTURE: *A Modern Synthesis* 85¢

GONDOR  
ART AND PLAY THERAPY ..... 95¢

KELLER  
LEARNING: *Reinforcement Theory* ..... 85¢

LEUBA  
THE SEXUAL NATURE of Man and Its  
Management ..... 85¢

MEENES  
STUDYING AND LEARNING ..... 95¢

OVERTON  
THOUGHT & ACTION: *A Physiological Approach* 95¢

WATSON  
PSYCHOLOGY AS A PROFESSION ..... 95¢

RANDOM HOUSE • The College Department • 501 Madison Avenue • New York 22

# *There IS an answer... for ALL ages!*

THE BROWN SCHOOLS  
for mentally  
retarded and  
emotionally  
disturbed persons  
from infancy  
to maturity\*



Older retarded persons:  
21 years and over  
Retarded children: infancy  
to 21 years  
Emotionally disturbed children  
and adolescents: 8 to 18 years

**FOR** a detailed catalogue  
describing THE BROWN SCHOOLS  
in both text and photographs, write to

**MRS. NOVA LEE DEARING,**  
Registrar  
Dept. E-O  
P. O. Box 4008  
Austin 51, Texas

Paul L. White, M. D., Medical and  
Psychiatric Director

*The Brown Schools*

Austin and San Marcos, Texas  
Founded in 1940  
Six separate resident centers

AGAIN AVAILABLE  
SECOND PRINTING

## **A GLOSSARY OF SOME TERMS USED IN THE OBJECTIVE SCIENCE OF BEHAVIOR**

By  
**WILLIAM S. VERPLANCK**

Provides an empirical vocabulary  
in the science of human  
and animal behavior

Familiarizes readers with de-  
velopments in the study of ani-  
mal behavior

Clarifies concepts used by be-  
haviorists and ethologists

---

Price \$1.00

Order from:

**AMERICAN  
PSYCHOLOGICAL  
ASSOCIATION**

1333 Sixteenth Street, N.W.  
Washington 6, D. C.





## QUALITY COLLEGE TEXTS

*For Courses in Abnormal Psychology*

### **PARADIGMS FOR PSYCHOPATHOLOGY**

**A Contribution to Case History Analysis**

by John Bucklew, *Lawrence College*

An application of a number of scientific concepts to the basic document of abnormal psychology—the case history. The concepts are carefully defined and explained, and their application to case histories is made easier by the invention of diagram elements whereby each case history can be analyzed visually as well as verbally. The point of view is that of modern behavioral psychology, including ego psychology. The case histories cover the areas of the neuroses and psychoneuroses, inadequate personality, and psychopathic and deviant personalities, with a chapter on psychoses. Emphasis is on a scientific, empirical approach to the data and theories of abnormality. Interpretations of case history are handled conservatively and do not belong to any one school of thought.

256 pages

List \$5.00

*For Courses in Motivation*

### **PSYCHOLOGY OF MOTIVATION**

by John F. Hall, *Pennsylvania State University*

Introductory materials cover instinct and drive and motive. This is followed by a full discussion of motivational antecedents such as primary and acquired needs and rewards. A treatment of behavior consequents—spontaneous activity, consummatory behavior, instrumental responses and behavior, and ego involved motivational antecedents—reaches the heart of the subject. Also, there is a study of the perceptual process and physiological bases of needs and rewards.

To be Published in May

List \$6.50

*For Seminars in Learning*

### **MEANINGFULNESS AND VERBAL LEARNING**

by Benton J. Underwood, *Northwestern University*  
and Rudolph W. Schulz, *The State University of Iowa*

A report of three years of research of the processes by which *meaningfulness*, the powerful variable which influences the rate at which verbal associations are formed, produces its effect. A logical, theoretical, and experimental analysis of verbal learning as related to several characteristics of verbal units which are associated with meaningfulness.

438 pages

List \$6.95

### **The Lippincott College Psychology Series**

Under the Editorship of

Dr. Carl P. Duncan,  
*Northwestern University*

and

Dr. Julius Wishner,  
*University of Pennsylvania*

*College Department*

## **J. B. LIPPINCOTT COMPANY**

333 W. Lake Street

Chicago 6, Illinois

## OXFORD PSYCHOLOGY TEXTS

Spring 1961

### SELECTED READINGS ON THE LEARNING PROCESS

edited by Theodore L. Harris, *University of Wisconsin*,  
and Wilson E. Schwahn

This new collection of readings in educational psychology makes readily available for classroom use over thirty experimental studies in learning by such leading investigators as Hull, Maier, Sherif, Lewin, Bruner and Goodman, Piaget, and Tyler. The studies emphasize the most significant functions and problems related to the processes of behavioral change in various types of learning.

1961                      437 pp.                      Illus.                      Paperbound \$3.50

### FOUNDATIONS OF PSYCHOPATHOLOGY

by John C. Nemiah, M.D., *Associate in Psychiatry, Harvard Medical School; Psychiatrist, Massachusetts General Hospital*

Designed as a basic textbook for medical students, this work will also be of interest to those in psychology and social work. It affords an excellent introduction to the basic principles of psychopathology, setting forth those principles that underlie the psychological and psychodynamic understanding of mental disorders and emotional conflicts.

1961                      352 pp.                      \$6.50

#### *Previously published*

#### GENERAL EXPERIMENTAL PSYCHOLOGY:

*An Introduction to Principles and Techniques*

By Lawrence M. Baker, *Purdue University*  
1960                      434 pp.                      Illus.                      \$6.00

#### LABORATORY EXPERIMENTS IN GENERAL PSYCHOLOGY

By Lawrence M. Baker and Carroll Weisiger, Jr., *Purdue University*; and William M. Taylor, *University of Akron*

1960                      128 pp.                      Illus.                      Paperbound \$2.25

#### CONTRIBUTIONS TO MODERN PSYCHOLOGY:

*Selected Readings in General Psychology*

Edited by Don E. Dulany, Jr., *University of Illinois*; Russell L. De Valois, *Indiana University*; David C. Beardslee, *Michigan State University*, *Oakland*; and Marian R. Winterbottom, *Connecticut College*

1958                      408 pp.                      Illus.                      Paperbound \$3.25

#### METHOD AND THEORY IN EXPERIMENTAL PSYCHOLOGY

By Charles E. Osgood, *University of Illinois*  
1953                      808 pp.                      Illus.                      \$11.00

#### PSYCHIATRIC DICTIONARY Third Edition

By Leland E. Hinsie, M.D. and Robert J. Campbell, M.D.

1960                      798 pp.                      \$17.50

#### INDIVIDUAL BEHAVIOR AND GROUP ACHIEVEMENT

By Ralph M. Stogdill, *Ohio State University*  
1959                      363 pp.; extensive references                      \$5.00

#### MEASUREMENT AND STATISTICS:

*A Basic Text Emphasizing Behavioral Science Applications*

By Virginia L. Senders, *University of Minnesota*

1958                      549 pp.                      \$6.00

**OXFORD UNIVERSITY PRESS**  
417 Fifth Avenue New York 16, N.Y.

focuses on the practical implications of theory and research

### **Children and Adolescents: Behavior and Development**

**Boyd R. McCandless, State University of Iowa**

Theory is integrated throughout the book into a coherent body of principles. Recent research findings are synthesized and evaluated. The result is a mature, scholarly book. The author gives special attention to the child's life in school in order to show the effects of school, as well as family life on development. A chapter of particular interest is "The Middle-Class Teacher and the 'Every-Class' Child."

March 1961, 544 pp., \$6.50 tentative

reflects progress made in psychology during the last five years

### **Psychology, Revised Edition**

**Delos D. Wickens, Donald R. Meyer,  
both of The Ohio State University**

The authors have rewritten every chapter in the light of the recent advances in psychology. They have included more detailed descriptions of many critical experiments. The exciting new findings on the relation between psychological and physiological processes prompted the complete reorganization of chapters on the biological foundations of behavior.

April 1961, 544 pp., \$6.35 tentative

a vital collection of readings and resources

### **Mental Retardation**

**Edited by Jerome H. Rothstein, San Francisco State College**

These 55 articles, bound together by the editor's excellent introductory notes, concentrate primarily on material published since 1955. A wealth of special resource material includes lists of films and materials on mental retardation, lists of curriculum guides for educable and trainable mentally retarded children, and reading lists for parents of retarded children.

May 1961, 608 pp., \$5.75 tentative

**HOLT, RINEHART & WINSTON, INC., 383 Madison Avenue, New York 17, N. Y.**

# Publications of the AMERICAN PSYCHOLOGICAL ASSOCIATION

## *Subscription Rates for 1961*

**American Psychologist.** Official papers of the Association and articles on psychology. Monthly. First issue appears in January. The 1961 volume is Vol. 16. Subscription: \$10.00 (Foreign \$10.50). Single copy \$1.00.

**Contemporary Psychology.** Critical reviews of books, films, and research material in the field of psychology. Monthly. First issue appears in January. The 1961 volume is Vol. 6. Subscription: \$10.00 (Foreign \$10.50). Single copy \$1.00.

**Journal of Abnormal and Social Psychology.** Original contributions in the field of abnormal and social psychology, and case reports. Bimonthly, two volumes per year. There are three issues in each volume. The issues appear in January, March, May, July, September, and November. The 1961 volumes are Vols. 62 and 63. Subscription: \$20.00 for 2 vols. (Foreign \$20.50). Single copy \$4.00.

**Journal of Applied Psychology.** Applications of psychology to business and industry. Bimonthly. The issues appear in February, April, June, August, October, and December. The 1961 volume is Vol. 45. Subscription: \$10.00 (Foreign \$10.50). Single copy \$2.00.

**Journal of Comparative and Physiological Psychology.** Original contributions in the field of comparative and physiological psychology. Bimonthly. The issues appear in February, April, June, August, October, and December. The 1961 volume is Vol. 54. Subscription: \$10.00 (Foreign \$10.50). Single copy \$2.00.

**Journal of Consulting Psychology.** Research in clinical psychology: psychological diagnosis, psychotherapy, personality, psychopathology. Bimonthly. The issues appear in February, April, June, August, October, and December. The 1961 volume is Vol. 25. Subscription: \$10.00 (Foreign \$10.50). Single copy \$2.00.

**Journal of Educational Psychology.** Studies of learning and teaching; measurement of psychological development, psychology of school subjects, methods of instruction, school adjustment. Bimonthly. The issues appear in February, April, June, August, October, and December. The 1961 volume is Vol. 52. Subscription: \$10.00 (Foreign \$10.50). Single copy \$2.00.

**Journal of Experimental Psychology.** Original contributions of an experimental character. Monthly, two volumes per year. There are six issues in each volume. First issue appears in January. The 1961 volumes are Vols. 61 and 62. Subscription: \$20.00 for 2 vols. (Foreign \$20.50). Single copy \$2.00.

**Psychological Abstracts.** Noncritical abstracts of the world's literature in psychology and related subjects. Bimonthly. The issues appear in February, April, June, August, October, and December. The 1961 volume is Vol. 35. Subscription: \$20.00 (Foreign \$20.50). Single copy \$4.00.

**Psychological Bulletin.** Evaluative reviews of research literature, discussions of research methodology in psychology. Bimonthly. The issues appear in January, March, May, July, September, and November. The 1961 volume is Vol. 58. Subscription: \$10.00 (Foreign \$10.50). Single copy \$2.00.

**Psychological Monographs: General and Applied.** Longer researches and laboratory studies which appear as units. Published at irregular intervals during the calendar year — between 15 and 20 issues per year. The 1961 volume is Vol. 75. Subscription: \$10.00 (Foreign \$10.50). Single copy \$1.00 to \$3.00 according to size.

**Psychological Review.** Original contributions of a theoretical nature. Bimonthly. The issues appear in January, March, May, July, September, and November. The 1961 volume is Vol. 68. Subscription: \$10.00 (Foreign \$10.50). Single copy \$2.00.

---

Cover pages, table of contents, and index (when there is one) are contained in the last issue of the volume for each journal.

**Discounts:** AGENTS and BOOK DEALERS receive a 10% discount on all orders.  
There is no club arrangement.

**Note:** There are no quantity, cash, library, or other special discounts.

► SUBSCRIPTIONS ARE AVAILABLE ON A JANUARY THROUGH DECEMBER BASIS ONLY ◄

Payment must be made in U.S. funds.

Send subscription orders to:

AMERICAN PSYCHOLOGICAL ASSOCIATION  
Subscription Department  
1333 Sixteenth Street, N.W.  
Washington 6, D. C.



